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Editorial

IT is intended that *Accounting and Business Research* shall be used as a forum for controversial matters. Two such are aired in this third issue. R. A. Fawthrop takes a distinctly sceptical look at discounted cash flow techniques, leading up to the conclusion that 'Not unlike certain old medical panaceas, discounted cash flow is indeed open to the accusation of having been over-marketed'. Professor Flower in his examination of the measurement of divisional performance concludes his study with some remarks on the limitations of existing methods of depreciation, and indicates that 'to ensure that in general the Profit and Loss account reflects the same return as the underlying projects requires the use of methods of asset valuation and depreciation unacceptable to most accountants'.

Adrian Buckley, speaking from experience in management consultancy, deals with guidelines for acquisitions in descriptive terms and contributes a check-list of rules in an article consistent with another basic aim of *Accounting and Business Research*, which is to provide material of immediate practical interest to businessmen. The article by J. Mellors on the effect of capital allowances on the incentive to invest is also of direct relevance to a common business situation.

The research side is represented by R. J. Briston, who with C. R. Tomkins and D. King presents an interim report on shareholders' behaviour on the new issue market.

On more general topics T. A. Lee reflects the growing interest in the *consumer* of accounting information.

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Underlying Problems in Discounted Cash Flow Appraisal

R. A. Fawthrop

During the last two or three years, business and professional journals in the UK have been devoting increasing amounts of space to expositions of the corporate appraisal of capital expenditure proposals by discounting the cash flows estimated to be generated by such proposals. The several alternative approaches under their various titles – present worth, DCF yield, internal rate of return, uniform annual cost, annual capital charge and so on – are featured to some extent in almost every book in quantitative management studies which has been published in this period. Accountants and others concerned in the financial management of economic enterprises continue to evince a steady interest in seminars and short courses devoted to these methods. It is noticeable that the content of relevant short courses, seminars and the like can today be planned on the assumption that many of those attending will have at least an elementary understanding of discounted cash flow appraisal.

Financial executives in this country have generally been cautious in their welcome to these freshly-propounded (but by no means new)¹ techniques, and their actual utilisation is still not widespread. Given that even elementary understanding is so comparatively recent, and that acceptance is still so tentative, it might seem rather premature to criticise discounting methods at this juncture. Because managerial acceptance of such techniques is comparatively unsure, is, however, no valid reason for not seeking to apprise that same management of the demerits of the techniques. Bluntly, too much writing and presentation in discounted cash flow appraisal is unacceptably, even dangerously, superficial. Financial managers seem to be intuitively aware of this, finding that an excessive pre-occupation with the calculus of the various methods, and debate as to their relative superiorities,

too often divert attention from issues of their realistic applicability or implications. This is partly true of all appraisal techniques, but is especially relevant to the greater sophistication of discounting techniques.

Project Dimension

In the first place, the basic determination of an 'investment project' is seldom discussed. A. J. Merrett and A. Sykes have defined² such a project as:

'... a largely irreversible commitment of resources made in the expectation of securing generally uncertain future gains'

beyond doubt an excellent description of the project as a concept, but scarcely of great value in determining its dimension in value or in time. The theory is quite clear: all related incremental cash-flows are to be brought into account. Many projects do consist of a hard core of clearly discernible, relatively easily quantifiable capital and associated revenue expenditures and receipts; but many are also surrounded by a vague penumbra of indirectly related expenditures and receipts, which are sometimes capitalised, but sometimes are not; sometimes foreseeable as quantities to be realised, sometimes overlooked as costs or gains of opportunities foregone. Often the relevance of an item may be seen, but difficulties of disentangling its value from some general operating context may occasion recourse to quantification by imputing rather than measuring. Accountants may be aware of these problems, but the instinct of 'that which is capital for the purposes of taxation' may still supervene over that awareness, and the conventions of accounting are not well directed towards appreciation of the concept of opportunity cost even when it takes the form of hard cash foregone. Thus there is a lingering affection for book value in replacement analysis that is sometimes hard to supplant by net realisable value; and the concept of 'obsolescence costs to infinity' implicit in the too early replacement decision in conditions of

¹ Many recent studies – e.g. R. H. Parker 'Management Accounting – an Historical Perspective', MacMillan, 1969 – evidence the venerability of discounting; and the current development of discounting techniques in asset valuation is clearly rooted in the work of such authorities as Fisher, Keynes and Hicks in the 'thirties.

² A. J. Merrett and A. Sykes, 'Capital Budgeting and Company Finance', Longmans, 1966: Introduction.

potential further improvement in equipment efficiency seems to come strange to many financial executives.

This problem of project dimension is best examined in the context of project independence. To what extent is a project truly separable from its fellows? The issue discussed here is not that of statistical independence, but of quantification of dimensional independence. Statistical independence is a problem which is familiar enough to the student of the implications of uncertainty in business decision-making, and might be made familiar to the lay reader in the guise of the pros and cons of diversification strategies, or the snowballing effect so commonly found in a deteriorating or moribund industry. Essentially, statistical dependence raises such queries as 'to what extent is the risk in this project affected by the risk in that project', or 'to what extent are the cash flows in one period of a project study affected by the cash flows of another period in that same study'. Dimensional dependence might be said to ask such questions as 'to what extent does the evaluated result of this project realistically reflect its reliance on the acceptance or rejection of some other project to which it is technically, or commercially linked' remembering that all projects are at rock-bottom linked to that existing set of projects called the firm. Most projects are financially linked: but the appraisal of financing decisions is for later comment.

Many of the problems of dimensional dependence arise out of time: more specifically, the inability to foresee beyond the immediate future, and the sometimes unwillingness to see that far. For example: a proposal to increase the production capacity of a plant, the additional output having a ready market at acceptable prices, is appraised by some discounting technique – say, present value – and found to yield an adequate positive net present worth. However, distribution of the extra product will, because of a necessary pattern of short trips running to tight delivery schedules, involve procurement of as many as six heavy road vehicles which will subsequently stand empty for considerable periods. On its own, the road vehicle project does *not* meet the appraisal acceptance criterion: and if the two projects are regarded as two parts of one large plant-capacity-cum-vehicles project, the appraisal criterion is still not met. Yet if a larger addition to plant capacity were made, and the extra additional product supplied at some marginal price to some other new production process which would not satisfy the acceptance criterion at any higher price, then the vehicles could operate to capacity over the distribution range of new customers and new project.

How many projects are there, and how are the joint capacity costs divided up and the product transfer prices quantified? Is it perhaps all one gigantic project? Is it not the case that really there seldom is a truly

dimensionally independent project? Because if the first joint project of plant and road vehicles is turned down: but *later* becomes not only feasible but also essential when the potential profitability of the new process is evaluated, we have a dimensional linkage in time as well as in technology and commercial strategy. Taken to absurd limits, a desire fully to take each linkage into account might result in no project ever being appraised, and perhaps no project ever being implemented: on the grounds that one never can tell what the future will bring in the shape of new projects. Of course, if business is to develop and management to direct, some assumption of project dimensional independence must be in practice be made. But conceivably this yet may still involve a much more sophisticated essay in project definition than the literature would have one believe.

The definition which is more relevant to the realities of the situation may be that of a set of linked projects rather than the individual project. This set would reflect not only dimensional but statistical project dependence, would seek to maximise some overall objective within the constraints of corporate policy and capital availability and might seek also to result in some corporate financial posture – e.g., in terms of liquidity – which management deems to have strategic value in terms of the capital market appreciation of the firm. The essential point is that the appraised result of the individual project within the set would be of comparatively little importance. Projects with (e.g.) comparatively low internal rates of return would be accepted because they complemented the joint characteristics of high-profitability projects in presenting a desired image in terms of corporate profitability, liquidity and durability as financial analysts and the money market measure these characteristics.

The idea of appraisal of sets of projects rather than individual projects is a familiar enough solution to the classical 'capital rationing' problem in appraisal studies, especially if project indivisibilities (the necessity of implementing all or none of a project, usually for technological reasons) supervene to any significant extent. Thus there are strong suggestions that investment appraisal should be carried out in terms of mathematical programming, whereby project selection by sets is greatly facilitated. At the same time, managerially imposed objectives other than, or in addition to, maximisation of the present value of the firm could be satisfied.

Objectives and appraisal

One such approach is reported by R. M. Adelson³ in a

³ R. M. Adelson, 'Discounted Cash Flow – Can we Discount It? A Critical Examination', *Journal of Business Finance*, Vol. 2, No. 2, Summer 1970.

most provocative article which relentlessly exposes several of the more dubious claims which are from time to time advanced in favour of discounting techniques of appraisal by their more ardent advocates. However reluctantly, one must agree that there is a considerable amount of force in his argument that, faced with major problems of uncertainty and the need to preserve some level of corporate liquidity, management can scarcely be castigated for relegating the issue of 'the time value of money' to a relatively poor third in their order of important considerations in decision-making. Suppose a certain project were to promise the generation of a single large cash-inflow at some future point in time which will, with a high degree of probability, closely coincide with the then replacement of some major asset requiring substantial capital outlays (assuming replacement to be essential to survival – although this again is an example of the questionable dimensional independence of projects). Suppose this same project were to demonstrate an unacceptably poor net present worth. Is such a project to be rejected out of hand, or is there not a case for asking 'what is so special about *present* value?' Here again is to be discovered an aspect of the time-linkage of projects, in terms of the question of what resources are to be committed to the investment opportunities now perceived, and what reserved or regenerated to finance the future. It must further be noted that no really satisfactory solution has yet been devised to the problem of selection between projects of unequal potential lives, except in the trivial case. Some sort of replacement or reinvestment assumption is necessary, together with a (usually technologically based) decision as to the period or 'time-horizon' of the comparison. In terms of corporate planning, how is a 'time-horizon' to be set, what happens when the currently-examined planning period expires, and how are its objectives and results to be incorporated into the next planning period – for firms are not wound up just because a plan is attained? Argument has been advanced⁴ that the real issue of capital expenditure control is not so much the appraisal of projects as ensuring the continuous innovation of projects of a sufficiently high profit potential. Without doubt selection is necessary to eliminate the dissipation of scarce resources in avoidable and non-strategic proposals which offer but an indifferent return. This renders it imperative that the selection techniques in use offer a valid assessment of that return. However, managerial attention must equally be focused on the need to be able to finance the high-yielding opportunity which may suddenly emerge, or to be able to bear the

abandonment losses of the investment which unforseeably has gone sour. Certainly in the UK, it is questionable whether the emphasis on the study of techniques in the appraisal of the investment decision has not been too much at the expense of the study of techniques in the appraisal of the equally vital financing decision.

For the moment, it seems necessary to point out that no appraisal technique is an end in itself. Usefulness lies in the ability of the technique to contribute to some principal objective. Over-concentration on the mechanics of discounting techniques obscures the fact that their real *raison d'être* lies in their claimed ability to achieve such an objective: the maximisation of the present value of the company. This, it is then argued, can be shown to be synonymous with serving the best interest of shareholders, largely by maximising the return on their investment in the company in the form of dividends or capital gain. Adelson is scathing in his criticism of both the hypothesis and the argument which is advanced to support it. It is true that the empirical testing of the several ingenious models which have been developed to demonstrate the mechanics of this synonymy is less than totally convincing in its outcome. It is equally true that the substantial realisation of this synonymy can be shown to be reliant upon a certain happy relationship of managerial and shareholder expectations, financial preferences and strategies which the lack of shareholder investment sophistication alone would render improbable, without the distorting effect of observed imperfections in financial communication and institutional constraints – not to mention human irrationality. Empirical demonstration is hampered by the accepted fact that expectations cannot necessarily be deemed to be simple extrapolations of observed results. The general unsuitability of much financial reporting for purposes of rational stock investment decision-making, does not make the task any easier. Nevertheless some synonymy between corporate profitability and shareholder economic welfare is often indirectly to be seen, and the occasional case of rare clarity (as in some corporate financial emergency) adds intuitive support to the hypothesis. Nor is it at all certain that some other project appraisal technique, such as mathematical programming, will necessarily offer some more perceptible link between appraisal objectives and shareholder interests. What is perhaps fairly certain is that the 'older' techniques of payback and accounting rate of return offer less.

This apart, Adelson's conclusion that:

'The time has surely come for the marketeers to substantiate their claim that "Brand DCF appraises most profitably". Until that is done, DCF is, and will remain, a "rule of thumb" which has no more

⁴ W. W. Haynes and M. B. Solomon, 'A Misplaced Emphasis in Capital Budgeting', *Quarterly Review of Economics and Business*, February 1962.

legitimate claim to fame than the methods it is supposed to replace.⁵

certainly cannot be dismissed out of hand, unpopular though it may be. As yet, no substantial empirical studies exist to show whether in fact, on observed case-studies, DCF appraisal was predictively more accurate than payback, accounting rate of return or whatever.⁶ As Adelson demonstrates, *ad hoc* hypothetical examples designed to show that project selection by payback would be 'wrong' whereas selection by (e.g.) net present worth would be 'right', prove nothing other than the ingenuity of their originators. There are no means of knowing how truly representative of the generality of real situations such examples are: and it takes no more ingenuity to devise examples where selection by present worth would be 'wrong', whereas selection by payback would be 'right'. It all depends upon the criteria for 'wrong' and 'right'.

However, it is questionable whether the contrast is even valid. Discounting techniques are designed to test for project acceptability essentially on grounds of profitability. Payback tests for acceptability essentially on grounds of liquidity. Whether profitability is always a sounder criterion than liquidity must, as was earlier argued, surely depend upon the particular resource circumstances of the firm, its financial strategy in the context of corporate objectives and plans, and (very probably) its ownership structure.

Data collection

A further point which too often seems to be lost sight of relates to the material of discounting techniques. There is absolutely no reason why payback, accounting rate of return, or any other appraisal technique should not consist basically (and subject to what has been said earlier) of a careful ascertainment of all relevant initial outflows, a methodical projection and monetary quantification of future costs and benefits, an accurate calculation of all the corresponding tax flows, and the orderly plotting of all these at their appropriate points on a time scale. There is absolutely no reason why payback, accounting rate of return, etc., should not quantify all of these in cash flow rather than accounting cost and income terms, with time-plotting according to date of cash movement rather than date of liability, etc. In other words, careful and detailed accumulation of the raw material of project appraisal, their expression in cash flow terms, and their orderly assignment to time-intervals, is not the prescriptive birth-right of discounted cash flow techniques of appraisal. Conceivably, it may be argued that the very essence of

accounting rate of return is its use of accountancy measurements and timings of expense and income: but one sees practiced and described such a plethora⁶ of alternative accounting rate of return calculations that one would hesitate to categorise the mere existence of such accountancy measurements and timings as the critical test establishing that accounting rate of return, rather than some other appraisal method, was in use. After all, how many presentations of discounting techniques seem almost to imply that all the accountant needs to do is to leave out the charge for depreciation and shift tax flows back by 12 months?

On the issue of taxation: little attention is paid in project appraisal literature to the wide variety of tax situations which potentially face the analyst. The universal assumption seems to be that either the project itself will generate a sufficient taxable surplus, or that adequate taxable profits already exist elsewhere in the company's operations, to mop up those generous initial or other capital allowances which authors and lecturers alike seem almost to imply are the sole prerogative of discounting techniques. The problems of time-plotting such allowances as carry-forwards in loss situations: the programming intricacies of selection and timing which arise in such situations as when several subsidiaries of a group are submitting tax-adjusted evaluations, yet group taxable profits are inadequate to sustain all the potential allowances: the potential inter-dependencies of projects where the realisation of one project's capital allowances is a function of the acceptance or rejection of some other project or projects: the realistic treatment of disposal gains or losses accruing subsequent to the end of the appraisal study-period – such issues as these are left to the initiative of the analyst, who (one suspects) too often accepts a convention of '12-months staggering' for want of inspiration to the contrary. Even in the case of a single-unit, wholly UK-domiciled company, one has seen the quite complex problems of judgement which are involved in deciding what, for that company, is a reasonably representative 'staggering' period. Issues of timing are of lesser importance in computing an accounting rate of return (unless, as is found on rare occasions, some exponential smoothing technique is applied to incorporate a liquidity constraint) than in payback: but a due consideration of the wider conditional nature of tax flows is a requisite of all appraisal processes.

All these appraisal methods are equally exposed to

⁵ Adelson notes the study by D. A. Allen and R. Edgeworth-Johnstone, which is possibly the best known in this field and which does not establish any outstanding predictive merit for discounting techniques.

⁶ 'Profit' net of depreciation, gross of depreciation; adjusted for inflation, not so adjusted; adjusted for tax, not so adjusted; based on variable cost, based on total absorption cost, etc., expressed as a return on initial capital (with or without working capital); weighted average (various methods) of period-written down capitals; average of initial and last project year capital; and so on.

the problem of uncertainty. Perhaps coincidentally, the development of analytical procedures aimed at resolving this problem has proceeded alongside the development of discounting appraisal methods. Both are products of the growth, during the last decade or so, in the application of quantitative techniques to managerial decision-making. Certainly the mathematical orientation of the discounting process has facilitated a more rapid utilisation by its exponents of probability theory-based techniques for dealing with risk and uncertainty: but this utilisation has generally taken the form of additional processing of discounted data rather than developing some new discounting concept which inherently incorporates adjustment for uncertainty (crude adjustments such as increased or differential appraisal rates apart). Thus uncertainty analysis is observed to be most often associated with discounting appraisal, but this need not be so: representing rather a reflection on the user of pay-back or accounting rate of return rather than some inherent advantage of discounting. In one particular, discounting practice is often uniquely capable of error in dealing with uncertainty. This is when uncertainty-adjusted cash-flows continue to be appraised by an appraisal rate based on a cost of capital estimate which in its very nature already incorporates a supplement for risk-taking. Here there is clearly a degree of double counting which seems frequently to be overlooked. It might also be argued that the more explicit correlation of discounting methods with shareholder benefits involves such methods with uncertainty to a greater extent, in view of the wider expectational implications of that relationship: and that failure accurately to adjust cash flows for uncertainty is all the more damaging to the credibility of discounting methods. Equally, it might be argued that this is a fault of the calculus of uncertainty rather than of discounting.

The principal advantage over 'older' appraisal methods which usually is claimed for discounting techniques is that due recognition is given to the time-value of money. Something has been said earlier on this point, principally in the context of the counter-issue of liquidity. In general, however, the basic truth of the concept of the time-value of money cannot be denied. What can be queried is whether a determination to incorporate an allowance for this concept might not be satisfied only at a high price in terms of other distortions of the economic facts of industrial and commercial life as we know them.

Reinvestment assumptions

One such aspect of discounting appraisal techniques which should be of considerable significance to accountants especially, is the reinvestment assumption

which potentially is implicit in the mathematics underlying the discounting process. This is a controversial issue:

'The internal rate of return method implicitly assumes that the proceeds can be reinvested at the same rate of interest as the rate of return. The present value method assumes that funds can be reinvested at the same rate of interest as the cost of capital.'⁷

'A common misconception regarding DCF return is that the capital recovered from a project is reinvested at the projects rate of return over the remainder of its life.'⁸

It is worth analysing the mathematical treatment of cash flows under discounting procedures, so that any implicit departures from UK accounting and financial practices arising out of reinvestment assumptions are clearly appreciated. No novelty whatever is claimed for the treatment, alternatives to which are to be found in Robichek and Myers⁹ and several other authorities. Yet discussion with accountants reveals a frightening lack of appreciation of the reinvestment issue.

In what follows, and purely for the sake of simplification; certainty, nil inflation, and a known, unchanged, discrete (annual) appraisal rate are assumed; cash flows are taken as discrete year-end quantities; and taxation is ignored. The project is determinable and independent, and does not occur in a situation of capital or other-factor rationing. (The unwary reader may be not a little alarmed at the number of assumptions to be specified before even this simple analysis can commence.)

'A single initial outlay now of £1,009 will secure a certain year-end cash inflow of £280 in each of the next five years. A present value calculation is carried out at an appraisal rate of 12 per cent. The resulting net present value is close to zero, indicating that the internal rate of return is approximately 12 per cent. As net present value is not negative (as the internal rate of return is not below the criterion acceptance rate), the proposal should be accepted.'

⁷ H. Bierman, 'Topics in Cost Accounting and Decisions', McGraw-Hill, 1963, p. 125: supported by (inter alia) Van Horne, Solomon, Quirin and J. C. T. Mao in their various works.

⁸ Merrett and Sykes, *op. cit.*, p. 117. This does not prevent the authors from claiming (p. 108) that the accounting rate of return is inferior to the internal rate of return in its relationship to the published return on capital employed because the accounting rate 'takes no account of the fact that capital is being reinvested'. At an earlier point in the book (p. 10) we read '8 per cent is the highest net of tax interest rate at which the company could raise money and not lose thereby, providing the company can repay the money as it chooses . . . or . . . can reinvest the money to earn the same interest rate as the loan'.

⁹ A. A. Robichek and S. C. Myers, 'Optimal Financing Decisions', Prentice-Hall, 1965.

At the moment of implementation (time $t=0$), the investor (person or company) disburses £1,009 and becomes entitled to five annual inflows of £280 each, the first inflow to be received in one year's time. This entitlement has an aggregate present value at 12 per cent of £1,009 or thereabouts.

At the end of one year ($y=1$), the investor is about to receive £280; and is entitled to four more annual inflows of £280 each, the first of which inflows is to be received in one year's time. The aggregate present value of this entitlement at 12 per cent or thereabouts, plus the £280 about to be received gives an aggregate investment worth, *at that moment*, of £1,130.

Once the amount now due has been received, the remainder of the investment is worth £850.

At the end of two years ($t=2$), the investor is about to receive £280; and is entitled to receive three more annual inflows of £280 each, the first of which inflow is to be received in one year's time. The aggregate present value of the entitlement at 12 per cent is £673 or thereabouts, plus the £280 about to be received: giving an investment worth, *at that moment*, of £953. Once the amount now due has been received, the investment is worth £673.

These calculations can be repeated for each of the five years of project life, and tabulated as shown below.

		Time (t)					
		0	1	2	3	4	5
Investment worth now (prior to receipt of amount now due)	(W_t)	0	1,130	952	753	530	280
Amount now due	(F_t)	(-1,009)	280	280	280	280	280
Investment worth now (after receipt of amount now due)	(V_t)	1,009	850	672	473	250	0

Obviously, immediately prior to implementation at $t=0$, the investment is worth nothing; because it has not yet been acquired. Immediately after the disbursement - notice F_0 is negative - the investor is entitled to five annual inflows of £280 each, with a present value at 12 per cent of £1,009.

The worth of the investment after disbursement is thus seen to have a declining 'saw-tooth' profile. This profile is a function of the mere efflux of time, for it is created as each annual inflow in turn is approached by the forward-moving present, becomes immediately due, is 'consumed' or disbursed and leaves a reduced series of future cash flow entitlements behind it. In the end, the last entitlement approaches, becomes due and is disbursed, leaving nothing behind it. The investment is then valueless.

Inspection of this data reveals a dual change in investment or project value between one period and the next:

1. Immediately after one cash flow has been consumed, the next cash flow is a year distant. But as the appraisal base moves through time towards it, it becomes nearer and nearer (it is subject to less and less discounting) until it is immediately due (it has a present value of unity). Thus the value of the investment, so long as that approaching cash flow is not yet consumed, APPRECIATES in time merely through the passage of time. For example, at time ($t=3$), i.e. immediately prior to the consumption of F_3 , the passage of time since F_4 was consumed has improved the project value from £672 to £753, an appreciation of £81. Appreciation

at this point is given by the expression:

$$W_3 - V_2$$

or, more generally,

$$W_t - V_{(t-1)}$$

2. As each cash flow is consumed, the investment must reduce in worth - there is one less entitlement left in the investment. This DEPRECIATION in the value of the investment is conveniently measured from one time-period to the next by the differences in period values immediately after consumption of the current due cash flow and when the next cash flow is a standard 12 months distance. Thus the depreciation between ($t-2$) and ($t-3$) is measured by a value of £672 decreasing to one of £473, a depreciation of £199. Depreciation at this point is given by the expression:

$$V_2 - V_3$$

or, more generally,

$$V_{(t-1)} - V_t$$

Depreciation at ($t=0$) is a special case, requiring some explanation. Mathematically, it is a strict interpretation of the function $V_{(t-1)} - V_t$, where V_t is a non-existent time, without investment value, prior to the base or implementation time. It is literally appreciation (negative depreciation) because it represents the sudden increase in the value of the investment, between the time of non-entitlement (because F_0 is not yet laid out) and the time of full anticipatory entitlement (immediately after F_0 is laid out).

These two changes in values can be tabulated as in Table 2 overleaf.

TABLE 2

	Time (t)					
	0	1	2	3	4	5
$W_t - V_{(t-1)} = Y_t$	0	121	102	81	57	30
$V_{(t-1)} - V_t = D_t$	-1,009	159	178	199	223	250
$Y_t + D_t = F_t$	-1,009	280	280	280	280	280

It will be noted that:

1. Appreciation is symbolised by Y_t , representing *income*.
2. Depreciation is appropriately symbolised by D_t .
3. The totals equate to the figures for annual cash flows (F_t) in the first table:

$$F_t = Y_t + D_t$$

'Cash flow in a period is composed of income plus depreciation.' There is a clear affinity to the accountants division of trading profit into depreciation and net (appropriable) profit: but the calculation of depreciation especially is very different from most accounting routines. Depreciation here is true

economic depreciation, and may be defined as 'erosion in value due to change of income earning capacity arising out of expiration of asset life'. Of course, if for a moment the assumption of certainty is abandoned, then a revision of expectations of any value F_t would alter both Y_t and D_t .

4. A cross summation of D_t for $t=1-5$ gives a total of £1,009, i.e. all capital is recovered over the appraisal period (which is the principal reason why depreciation is excluded in quantifying F_t in discounting processes in the first instance).

We are now in a position to examine the investment rate of return in some detail:

TABLE 3

		(Internal rate of return - 12%)					
		Time (t)					
		0	1	2	3	4	5
Value remaining in investment after receipt of amount due	(V_t)	1,009	850	672	473	250	0
Income accruing in next period	(Y_t)		121	103	81	57	30
$Y_{(t+1)}$ as % of V_t			12%	12%	12%	12%	12%

The internal rate of return is seen to be given by the income fraction of cash flow expressed as a percentage of the value remaining in the investment: that is, as a percentage of the capital remaining in the investment, as the internal rate of return by definition just equates investment value and capital input. The implication is, that the depreciation fraction of cash flow is disbursed not only out of the project but also out of the investing firm - it is returned to the suppliers of capital.

This scarcely accords with most types of corporate financing except perhaps bank overdraft. Even with instalment debt - e.g. leasing - repayment is by contractual schedule.

If the depreciation fraction was not so totally disbursed, it would have to be reinvested within the firm. Let us examine the situation if the depreciation fraction is reinvested to yield 12 per cent, i.e. at the same rate as the yield of the generating project:

TABLE 4

Time (t)	Depreciation (D_t)	Aggregate D_t reinvested	12% Interest on aggregate reinvested	Income (Y_t)	Income + interest
1	159			121	121
2	178	159	19	102	121
3	199	337	40	81	121
4	223	536	64	57	121
5	250	759	91	30	121

In this tabulation, D_1 accrues at the end of period 1 and is immediately reinvested over period 2 to earn £19 interest by the end of that period: when the interest is immediately disbursed as income. D_2 now accrues and is reinvested with D_1 : together they earn £40 interest during period 3, which is disbursed as income at the end of period 3 - and so on.

It will be noted that D_5 is not reinvested. Together with the aggregate of the reinvested fractions D_1 , D_2 , D_3 and D_4 it is retired from the project, which is now worthless. Thus all the capital in the project is disbursed at the end of the project life under this approach. The investor has thus the prospect from this project of a five-years' (end-of-year) income of £121 per

annum and a $(£795 + £250) = £1,009$ capital recovery at the end of five years – a prospect with a present value of $£1,009$ at twelve per cent discount rate, yielding zero net present value for an outlay of $£1,009$.

The income of $£121$ per annum is observably 12 per cent of the initial capital outlay of $£1,009$: and is obtained as the aggregate of the income fraction of project cash flows plus income yielded by reinvestment of depreciation. This is all very much more in line with business usage and thinking. But it is attained only by reinvestment at the internal rate of return (at least) of the generating project.

Hence, potential project internal rate of return is only actually realised if and only if *either* capital is repaid at will to the amount of depreciation as it is generated by the cash flows during project life; *or* that amount of depreciation is reinvested at that same rate of return over the project life (which may not be feasible in the case of the project with an exceptionally high after-tax internal rate of return) and is then disbursed, in total as capital recovery at the end of the project life. One is tempted to deduce that, as share capital with limited liability may not by law be repaid at will, nor can long-term debt usually be redeemed save under contractual terms; yet as, for most companies, exceptionally high-yielding reinvestment projects do not readily abound; one is faced with a choice of the illegal or the impossible.

One escape from this apparent dilemma is to appraise the investment or project solely in terms of an appraisal rate of interest at which reinvestment does seem reasonably feasible. Such a rate might be termed an 'investment opportunity rate'. If a company could at all times be sure of being in possession of all the capital funds that it could ever want, then obviously it would pay that company to push its investment and project expenditures right up to the point where the last (least profitable) investment just equalled the cost of those funds. Thus, the cost of capital sets a 'floor' to the 'investment opportunity rate'. If management dictates that 'no project shall be undertaken which does not yield better than x per cent return', it follows that if x per cent is higher than the present cost of capital to the company, while further capital with an incremental cost of less than x per cent is still available to the company: then this managerial decision is a sub-optimal policy because profitable projects are being needlessly discarded – unless there are other constraints for those investments, such as a shortage of suitable expertise in project supervision. Even then, only if attracting new supervisors would be at a cost which would cause sufficient otherwise acceptable projects to yield an inadequate return, is the policy not sub-optimal over the longer period.

Financing decisions

The weary reader may now perceive the next set of pitfalls which opens up before him. It really does seem more meaningful to appraise capital expenditure projects by a rate of interest at which cash flow reinvestment is sensible.¹⁰ But *what* rate of interest?

One suggestion might be to choose a 'safe' rate – i.e. an investment opportunity rate significantly greater than any estimated cost of capital, but still thought to be reinvestment feasible. The result may well be sub-optimal decisions. One reason – the potential discarding of potentially profitable activities – was summarised in the previous paragraph. A second reason is that the net present worth of a project alters as the appraisal rate of interest is varied: not in strict proportion to that variation, but according to the cash flow time-profile of the project. Thus, at a discount rate of 12 per cent project A is acceptable, project B is not: at 18 per cent (say) B is acceptable, A is not. (This sort of thing would happen if, for example, B had a largish net outflow late in its 'life'.) Generally, such a policy would tend to screen out projects with long gestation characteristics, which are not necessarily the least profitable. Safe, low-cash-flow projects would also be rejected. An arbitrary choice of appraisal rate, justified on the grounds that at least it is higher than the cost of capital, may in given circumstances not attract too great an incidence of these problems of altered rankings – but is an unknown margin of error acceptable?

An alternative would appear to be to use a best estimate of the long-run cost of capital for the firm. The immediate problem is to settle upon such an estimate. Various quantification models exist, but again the fundamental issue is one of an unknown potential margin of error. A favourite argument of those who would nevertheless make such a quantification is to the effect that quite significant changes in appraisal discount rates make little or no difference in project selection or acceptance. Unless one can know the cash flow time profiles of all projects to be thus appraised now and in the future – and plainly, that is a fallacious assumption – then one just cannot know that 'little or no difference' is an absolute truth, a general truth, an 'acceptable' truth, or true with 'm per cent confidence'. Further, if in fact a situation of capital rationing obtains (and this is not always foreseeable whether in terms of demand for or supply of

¹⁰ I.e. net present worth evaluation is apparently preferable to internal rate of return analysis. The latter is suspect anyway because of its potential inability to give correct or meaningful answers in situations of mutually exclusive projects (unless incremental analysis is also used), multi-yield projects, mixed projects (except in a modified form) and project indivisibilities in capital rationing situations. However, net present worth is by no means without its problems.

investible funds) such that projects with a positive net present worth at this 'cost of capital' appraisal rate have to be rejected; then this rate is obviously irrelevant (which is why the much-advocated ranking of projects by present worth indices as a selection technique in rationing situations is usually irrelevant). Some other (higher) cut-off rate is required, and at once the problems of changes in project ranking as the discount rate varies come into play. More importantly, if project indivisibility (the need to implement all or none of a project) is significant then what is required is that cut-off rate which will maximise the aggregate net present worth of that set of projects which most nearly satisfies the rationing constraint as an equality. Given that several competing sets, containing common project elements, would satisfy the rationing constraints: and that project postponement or advancement in time may be feasible, with different rationing constraints projected through time; and that inter-set relative net present worth superiorities shift with variations in the discount rate: it will be seen that recourse to mathematical programming is essential, and that even use of this tool of analysis is in this case subject to a formidably complex and voluminous computational load. Any less comprehensive solution process may be dangerously superficial.

It must be noted the problem is much intensified where, even though the cost of capital may be relevant and can be quantified, it is seen to be an increasing function of the demand for capital by the firm. This is basically an aspect of financing decisions, operating not only through recourse to more expensive capital but also through reciprocal effects on existing capital costs which may (or may not) become effective as existing shareholders and creditors become (or do not become) averse to new capital raising operations which are seen as prejudicial to the safety of their present investments. 'Financial risk', as this phenomenon is termed, is a controversial issue, both as to the direction and the extent of its influence on the cost of capital; but it must be taken into managerial consideration. Thus as the firm seeks to break out of the straightjacket of a shortage of capital (relevant to the investment opportunities it sees before it) by having recourse to newer and more expensive forms of debt, so those same opportunities may have to be re-appraised at an increasing appraisal rate and may be found thereby to be altered in their attractiveness. In this case, project selection may well be guided as much by consideration of potential liquidity generation as by potential profitability.

Mention was earlier made of the generally sparse attention which, in discussion in the UK, is devoted to the financing decision as opposed to the investment decision. Surely, 'where best to get the money from'

is as important as 'what best to spend the money on'. Such discussion as there is usually centres on the issue of capital structure as it creates 'financial risk'. Generally, the discussion is concerned with a paradox. As debt normally is a cheaper form of capital on an after-tax basis than equity, financial management should strive to use as much debt as possible. The average cost of capital will be reduced, which implies a greater range of feasible investment opportunities and a consequent promotion of shareholder interests. But the same shareholders will take fright at an excessive use of debt, abandoning their investment in the firm, depressing share prices and thereby putting up the cost of equity capital. Creditors too will seek a higher return on new loan capital, especially if it is subordinated. Thus there is some optimal financing equity-debt structure at which cost of capital is minimised, and towards which corporate financial strategy should be directed. By extension of this argument, management should adopt as financial policy some well-nigh immutable long-term debt-equity ratio which they estimate as optimal in this sense, thereby establishing the weights to be used in calculating the average cost of capital. This policy decision is taken quite independently of the various investment decisions which are to be appraised in terms of that cost of capital.

The whole argument ignores 'financial linkage' – the ability of investment projects to generate funds for the financing of subsequent or contemporary projects: either in the form of reinvestable cash flows or hypothecable assets. What ought to matter is not some arbitrary ratio of debt to equity, but the ability of a firm's cash flows to service and liquidate debt – what might be termed the 'debt-supportiveness of cash flows'. It would follow that the 'optimum debt-equity ratio' would be a function of the prospective cash flows of the individual firm, and might fluctuate quite sharply from one period to another. Judging from experience and from discussion, some bank managers and other credit institutions certainly see it this way.

However, many dissertations on financial policy continue to insist upon a clear separation in management thinking, between investment decisions and financing decisions. Investments are to be appraised first to establish the quantity of capital required; which will then be raised in the predetermined ratio of equity and debt. Obviously, the investment appraisal rate is to be based on an average cost of capital wherein the weights used to derive the average are those established by the predetermined debt-equity ratio. Thus it is internally consistent to speak of the cost of capital as being based upon the 'chosen long-term capital structure' and necessary to assume that management has the data and knowledge on which

to base their choice.¹¹ This assumption is quite necessary to the whole argument. If not, then the cost of capital-based appraisal rate may be higher than necessary, stultifying investment and the promotion of shareholder economic well-being: or more-or-less inconsistent, even random, movements in capital structure may take place – which would vary the cost of capital and so necessitate re-appraisal of programmed investments. In this second alternative, investment policy becomes extremely short-term and may become an iterative process.

An interesting joint-product of this 'separate decisions' approach is the treatment accorded to the evaluation of instalment-debt such as hire-purchase and leasing. The different interest costs and repayment schedules of competing instalment-debt contracts naturally means that at any given time different amounts of finance are outstanding (are being utilised). At once it becomes imperative to calculate the amount of debt involved, as this may contravene the pre-determined debt-equity ratio. Quite intricate (and to this writer, ludicrous) analysis becomes necessary.¹² Another consequence is that to be consistent it becomes necessary to compare leasing only with other forms of debt. It cannot be compared with equity financing, because (given a predetermined debt-equity ratio) it can never substitute for equity. It can only compete for a share of the total allocation of debt financing, and so can be compared with other forms of debt only. This seems unnecessarily restrictive, and in practice would almost certainly not be adhered to.¹³

Yet another result of the 'separate decisions' approach is far less defensible. Different forms of

financing attract different tax allowance structures. Nevertheless, one continually sees, in teaching and in practice, investment cash flows set up which include capital allowances based on outright purchase. The cash flows are then appraised by a discount rate based upon an average cost of capital which includes (or should include) due acknowledgement of the use and cost of other forms of financing. At the very least, the tax cash flows built into the appraisal study should be a weighted average of those different allowances which would eventuate under the different financing methods envisaged in the cost of capital. This would be consistent – it would also be laborious. (It is, of course, axiomatic in discounting principles that to appraise a project discriminatorily – i.e. at the cost of the particular type of capital to be used in financing that project – is erroneous. A 'pool of funds' approach must be used. A case for discriminatory appraisal can be made out in certain cases of extreme financial linkage.)

It is questionable whether in fact any more than a very few companies do utilise a 'predetermined debt-equity ratio' of any real stability. Entrepreneurial dislike of debt may keep it to a minimum. The analysts' traditional ratios of 'gearing' and 'times interest covered' do not seem to afford any clear guidance as to 'acceptable levels' (nor as to a settled method of calculation, for that matter). Most writers consider that the 'predetermined ratio' should be in market-value terms: but how reliable is the share-price quotation for marginal transactions as an indicator of the market price of all the issued capital, and what about non-quoted firms? An investigation was carried out to test changes in UK ordinary share earnings yields between 1964 (a year of low business risk) and 1967 (a year of some deflation) for two large samples of companies: one sample of firms which was 'low-g geared' in both periods, and one sample of firms which steeply increased (up to more than 50 per cent) formal capital gearing over the period. Sample earnings per share were very similar for both samples in both periods. Earnings yield showed, if anything, a decrease over the period for those firms which increased gearing, and a distinct increase for those which held gearing more or less unchanged. On this evidence, the concept of an 'optimal capital structure' does not hold in the UK over a very wide range of gearing; very large quantities of funded debt being accepted by shareholders with comparative equanimity. Given that instalment-debt is even less disclosed on the vast majority of UK balance sheets, the actual existence of a 'predetermined debt-equity ratio', or of realistic grounds for its existence, is very dubious indeed.

In short, capital structure can and should vary within quite a wide range as corporate financial management seeks to take tactical advantage of fluctuating

¹¹ J. F. Weston and E. F. Brigham, 'Managerial Finance', Holt, Rinehart & Winston, 3rd edit., 1969, p. 354, Chap. 11. This Chapter constitutes an admirable summary of the theory of separate financing decisions. These authors concede that lack of factual knowledge of the size and direction of shareholders' financial risk-aversiveness compels acceptance of the present capital structure as being the optimal one: which seems to make policy merely a confirmation of historical accident, in many cases.

¹² See, for example, R. F. Vancil, 'Leasing of Industrial Equipment', McGraw-Hill, 1963, especially chapter 4: or W. L. Ferrara, 'Investment and Financing Decisions', *Accounting Review*, No. 41, January 1966. Vancil in fact happily compares leasing with unspecified alternatives which look suspiciously like purchasing via equity.

¹³ In practice, it probably will not. Those clauses in the Articles of Association which limit the borrowing powers of directors would seem to set an upper limit to the debt-equity ratio: but in questioning company management and auditors, this writer has found very few cases where hire-purchase and leasing were recognised as falling within that limit, as indisputably they should do. The short-term nature of instalment-debt contracts seems to exclude them from managerial concepts of debt, in most cases: and this despite the usual renewal of such contracts. It is for this reason that it is considered that an average cost of capital calculation might very easily neglect to include for the use of instalment debt.

tuating liquidity situations and changing costs of funds. If this means that the average cost of capital varies, and thereby the investment decision appraisal rate becomes less than stable, that is scarcely good reason for imposing an artificial rigidity on financial planning and policy. Two solutions are open to the analyst. Firstly, to realise that quite wide changes in capital structure will scarcely materially affect the average cost of capital within the range of his estimate of the individual costs of capitals – especially equity. If this is a way of saying that cost of capital quantification (and hence discounted cash flow appraisal) is fundamentally imprecise, so be it. This appraisal technique is imprecise, and management should know it.

Secondly, to abandon (as it should be abandoned) the artificial separation of financing decision and investment decision. As investment decisions are formulated, cash flows would be thrown up. These could be used for financial linkage – the financing of further projects: but the acceptance of new debt commitments would vary the average cost of capital, and thus the investment appraisal rate – involving a re-appraisal of both the first and second sets of projects. A simultaneous solution of the problem is required, with the dual objective of optimising liquidity for financial linkage and investment for total set net present worth. It is possible to do this, using integer programming (or linear programming for a closely approximate solution). The computational load is heavy, and issues of project dimensional dependence and time-horizon remain to be solved. Using an iterative routine, it is possible to approximate a solution by manual data processing methods, albeit with a significant consumption of time and the risk of an unknown degree of error in some areas of analysis. But it all makes nonsense of the idea that an investment project can be usefully identified, dimensioned, expressed in cash flow terms, appraised and financed independently of all other projects.

Conclusion

In this review there have been noted, in necessarily brief form, some of those less satisfying aspects of discounting techniques widely recommended for use in appraising proposals for major capital expenditures. No new discovery is claimed thereby: but as these techniques appear slowly to be gaining ground in acceptance and application, it is imperative that those so applying them should be aware of their inherent weaknesses. Not unlike certain alleged medical panaceas, discounted cash flow is indeed open to the accusation of having been over-marketed. If it has any superior claim for use over its rival appraisal techniques, that claim is but of a negative character if it is that 'discounted cash flow appraisals are done better'.

They may in fact be so, in terms of detail of analysis and of calculation, and in the usage of cash flows rather than income and expenditure: but that is a reflection on the way other methods are carried out, rather than praiseworthy in the calculus of discounting techniques. Discounting, it will be said, alone differentiates between and allows for the 'time-value' of money. So indeed it does – if the allowance factor (the discount rate) can reasonably be approximated; if uncertainty and rationing (liquidity) factors do not make the 'time-value' of money comparatively irrelevant; and if the implicit reinvestment strategy is feasible in practice.

It is possible to construct a theoretically appealing valuation model which clearly demonstrates a close consistency between project appraisal by discounting techniques and a rational corporate strategy based on the maximisation of the present value of shareholders' equity. This is a major study in itself and unfortunately not one which has shown itself to be particularly susceptible of proof by empirical research. Its complete realisation can all too easily also be shown to be dependent upon a rational ordering or coincidence of managerial, shareholder and capital market expectations, information resources and preferences (of liquidity and of income) which does not in fact appear to exist – except in the occasional case, which then seems very clearly to demonstrate that something like the model evidently does operate.

However imperfect and distorted may be the transition from model to reality; this potential integration of discounting appraisal techniques with a valid, operable corporate objective is the real ground for claiming a superiority for discounting over other appraisal techniques. Hopefully, the present somewhat reluctant and sceptical acceptance of discounted cash flow which inevitably leads to the current excessive preoccupation with the 'mere mechanics' of the technique will with time develop into a wider (but no less sceptical) realisation that discounting has its own wide implications for financial decisions and strategy. In particular, recognition of the flexibility afforded to financial structure by the more recently-developed forms of finance must be incorporated into financing decisions. The economist's concept of an idealised minimum cost capital structure, useful though it may be for the formal development of a body of financial theory, must give way to the reality of a more opportunistic financial policy: and fresh ways to integrate financing and investment decisions must be sought.

With this there must come a requirement better to understand just what discounting techniques are and what are their limitations, as well as their contributions. That there are such limitations should not discourage

Capital Allowances and the Incentive to Invest

John Mellors

The abolition of investment grants and the introduction of the new capital allowances is intended, in the words of the government, to 'help promote the conditions likely to stimulate higher investment'.¹ Cynics might be forgiven for doubting the incentive effects of a change that was expected to save the Exchequer £150 million in a full year (page 7, *Investment Incentives*). One writer has already shown that where a project was eligible for an investment grant the post-tax profitability of such a project may actually decline under the new system.² The purpose of this paper is to widen the discussion and establish guidelines by which the impact of alternative systems of capital allowances may be assessed. In outlining its proposals the government noted that capital allowances affect both the post-tax profitability of new projects and the cash flow needed to finance these projects. The new allowances will be considered with reference to both these factors. The intention is to judge the merits of the new allowances *per se*, so that no attempt is made to predict the overall impact of the government's policies upon investment behaviour. Moreover the discussion is in terms of the effect of capital allowances upon investment in plant and machinery alone. Finally, it is assumed throughout that industry evaluates its investments in terms of *post-tax* returns. Within these limits some useful conclusions can be drawn as to the incentive effects of the new allowances.

¹ *Investment Incentives*, Cmnd. 4516, HMSO.

² I. D. McDonald, 'Investment Incentives and Decisions', *The Accountant*, 3 December 1970, pp. 771-3.

Capital Allowances and Project Returns

We start by considering the impact of capital allowances upon post-tax project returns. It will become apparent that by increasing the rate at which an asset's cost may be written off against taxable profits the government is not increasing the incentive to invest so much as reducing the *disincentive* to investment that is built into our taxation system. This built-in disincentive effect is attributable to the time discount factor and may be readily demonstrated. Consider the investment project outlined in Example 1.

The Net Present Value (NPV) of the pre-tax cash flow (row (i)) at a discount rate of 10 per cent is +£1, and the investment should be undertaken. If the tax system were neutral as regards investment decisions this project would still be undertaken after the imposition of a proportional corporation tax. That is, if the tax rate was 45 per cent and the tax system neutral, the post-tax NPV would be reduced to +£0.55 but the project would remain profitable. Lags in the assessment of profits for tax rule out the possibility of complete neutrality, but when firms are required to depreciate asset cost over the life of the asset (in calculating capital allowances) the effect is to reduce the post-tax profitability of investment by a greater amount (proportionally) than profits are reduced by taxation. Row (ii) above shows capital allowances calculated on the basis of a combined initial and first year's writing-down allowance of 50 per cent and subsequent writing-down allowances of 20 per cent. The calculation assumes that the firm

EXAMPLE 1

(all figures to nearest £)

Period	0	1	2	3	4	5	6
(i) Pre-tax cash flow	-1,000	264	264	264	264	264	—
(ii) Capital allowances	—	-500	-100	-80	-64	-256	—
Taxable profit	—	-236	164	184	200	8	—
Tax paid (—)	—	—	+106	-74	-83	-90	-4
(iii) Post-tax cash flow	-1,000	264	370	190	181	174	-4

has other income to absorb the large capital allowances in period 1 so that when tax is payable in period 2 there is a reduction of £106 in the firm's tax bill. Discounting the post-tax cash flows of row (iii) at 10 per cent yields a NPV of -£82 and the project ceases to be profitable. This is the disincentive effect introduced by spreading capital allowances over the life of an asset. The higher the discount rate and the longer the life of the asset, the greater will be the disincentive to investment caused by delayed depreciation for tax purposes. It would appear then that by *increasing* the rate at which an asset's cost can be written off against profits the government will be *decreasing* the disincentive to investment.

Before proceeding to an examination of whether this is, in fact, the case we must decide upon a standard by which to judge alternative systems of capital allowances. The standard adopted here is the proportion of an asset's cost borne by the government under a given system of capital allowances, compared to the proportion of corporate profits taken by it via corporation tax. The proportion of an asset's cost borne by the government depends upon the tax revenue foregone in allowing capital allowances as an offset to taxable profits. Thus in the example above the NPV of capital allowances granted is:

$$500(1+0.1)^{-1} + 100(1+0.1)^{-2} + \dots + 256(1+0.1)^{-8}$$

i.e. £727. With corporation tax at 45 per cent the present value of tax revenues foregone by the government in granting capital allowances will be $0.45 \times £727 = £327$. This figure represents 32.7 per cent of the asset's cost. We can thus say that under the above system the government takes 45 per cent of taxable profits while bearing only 32.7 per cent of investment costs. Expressing the latter figure as a percentage of the former we can say that the government bears only 72.7 per cent of investment costs that it *should* bear under a neutral system of taxation. Note that when the government's contribution is in the form of capital allowances alone it would suffice to express the present value of capital allowances as a percentage of investment outlay. The measure adopted here is used to accommodate the case of an investment grants plus allowances system. The system of capital allowances under which this measure approaches 100 per cent most closely will be that under which the disincentive to investment is least.

This measure of the degree to which a disincentive to investment exists has been computed for four alternative systems of capital allowances, the results being shown in Table 1 below.

Assumptions used throughout in computing the above table are that the discount rate is 10 per cent and that

TABLE 1
Proportion of investment costs borne as against proportion of profits taxed (%)

Project life (years)	6	8	10
System (i)	94.4	90.8	88.2
(ii)	73.6	70.3	66.3
(iii)	74.6	73.8	73.5
(iv)	90.9	90.9	90.9

the firm has sufficient profits to absorb the capital allowances for a particular investment outlay in the year that they are granted. Given the latter assumption the profits arising from a given project are irrelevant to our measure, as is the size of the investment outlay. A further assumption made has been that of a *single* investment outlay made in period 0, with zero scrap value at the end of the project's life. This is certainly a simplified view of investment projects in practice, but the simplification does not negate the general implications of the figures. Generalised expressions for the computation of the measure used, for each of the four systems, are to be found in the Appendix to this paper.

Under system (i) it is assumed that an investment grant of 20 per cent is received at the end of the first period, with writing-down allowances given against profits at the end of the second and subsequent periods. The tax rate is taken to be 45 per cent and the writing-down allowances are computed at the rates of 25 per cent, 20 per cent and 15 per cent for the project lives of 6, 8 and 10 years respectively. This system corresponds to that previously in force for projects involving outlays on new plant and machinery outside the Development Areas.

System (ii) relates to the old system of capital allowances for investment outlays ineligible for an investment grant. The tax rate is again taken to be 45 per cent, with an initial allowance of 30 per cent received at the end of the second period together with a writing-down allowance in that and subsequent periods of 25 per cent, 20 per cent or 15 per cent as before.

System (iii) corresponds to the new system of capital allowances with the initial allowance of 60 per cent received at the end of the second period with subsequent writing-down allowances given at the standardised rate of 25 per cent. The tax rate here is taken to be 42½ per cent.

Finally, system (iv) represents a system of free depreciation where 100 per cent of an investment outlay could be written off against other income of the firm at the end of the first period. The figure produced under this system will be unaffected by either

the tax rate or the project life. In all cases account has been taken of balancing allowances, where relevant.

What are the conclusions to be drawn from Table 1? Firstly, it is apparent that where an investment project was ineligible for an investment grant (e.g. because it involved second-hand machinery or related to a service industry) then the change from system (ii) to system (iii) has involved a reduction in the disincentive to investment. The effective contribution of the government to the cost of an investment outlay has risen, but by an insignificant amount in the case of the 6 and 8 year investments. It would appear that the only substantial stimulus to investment provided by the new system is for longer term projects (with lives of 9-10 years and over) where the investment outlays were previously ineligible for investment grants. Moreover, where projects were eligible for a grant under system (i), the effective contribution of the government to the cost of investment outlays has declined sharply with the change to system (iii). For manufacturing industries with projects involving new plant and machinery the abolition of the grants has significantly increased the disincentive to investment, with a marked move away from the neutrality of the tax system in investment decisions.

The government stated that 'the investment grants scheme has involved a high public expenditure cost without achieving its objectives'. This implies an estimate of the level of new manufacturing investment in the absence of the grants scheme, and no such estimate has been reported. However, some of the government's objections to the grants scheme were valid. The scheme involved an administrative burden, it arbitrarily discriminated against service industries and the grants were available whether or not profits were being made. The inclusion of system (iv) in Table 1 above (free depreciation) shows that such a system could answer these objections without involving the substantial disincentive effects of the government's proposals. For the 6-year project in Table 1 even free depreciation would not yield so effective a contribution to investment outlays as that under system (i). However, the difference is not great, and for longer-lived projects a system of free depreciation represents the smallest departure from tax neutrality that is possible in practice, given the inevitable lags inherent in the tax system.

Of course, the idea of free depreciation is hardly novel. It is already granted for certain types of investment outlay such as the capital cost of ships. If the government is serious in its wish to stimulate investment via capital allowances then free depreciation should be extended to all classes of new investment. Firms that were not making profits would have to carry forward their capital allowances, thus losing

much of the benefit of free depreciation. The system would involve no further administrative burden and need not involve arbitrary distinctions between different sectors of industry. A system of free depreciation might also reduce the extent to which capital allowances are the plaything of successive governments. Free depreciation would not save the Exchequer money, but if the intention is to stimulate extra investment then free depreciation would raise the post-tax profitability of a number of marginal projects above zero. The rate of corporation tax could be maintained at 45 per cent since a reduction in the rate of tax has no direct effect upon the decision as to whether or not to undertake such marginal projects. Free depreciation would only seem generous by comparison with some earlier systems of capital allowances. It is more properly regarded as the system under which the government shares the costs of investment outlays to the nearest practicable extent that it already shares in profits.

Capital Allowances and Cash Flow

There is another side to the evaluation of alternative allowance systems, namely the extent to which different systems reinforce the cash flow needed to finance investment outlays. Here it becomes necessary to move away from discussion in terms of individual projects to consider the firm's investment programme as a whole. In moving to this overall view a number of simplifying assumptions are necessary if the analysis is not to become unduly lengthy. Thus the reader is asked to bear in mind that the following is intended to do no more than provide some tentative conclusions as to the efficacy of the new allowances in reinforcing a given firm's cash flow.

Capital allowances may be regarded as a method of allowing a certain proportion of profits to be set aside as tax-free funds for reinvestment. Of course, depreciation reserves that have been allowed as deductions from taxable profits are only one source of funds for new investment. A part of the increase in post-tax profits resulting from the reduction in corporation tax will increase the volume of post-tax retained earnings used to finance new investment. However, we are only concerned here with the extent to which the new allowances will affect the timing and amount of tax payable by the firm. Of particular interest is the extent to which *growing* firms benefit under alternative allowance systems. The greater the total of capital allowances received by a firm in any given year, the greater will be the reduction in tax payable in that year and the larger the boost to cash flow. The measure used here of the extent to which systems (i) to (iv) above will reinforce total cash flow is *total capital allowances received in any given year*, as a

proportion of *gross investment outlays in that year*, a measure hereafter denoted by P .

In practice, the total of capital allowances received in any year will be a function of the age distribution of the assets to which they relate and the rates of allowance applicable to these assets. Moreover, gross investment outlays are unlikely to follow a simple pattern of growth, consistency or decline over time. To view the fundamental properties of each allowance system we abstract from these complications and assume (a) that every asset purchased by the firm is of an identical nature with zero scrap value at the end of its working life, (b) that the gross investment outlays of the firm grow at a constant rate over time (although this rate may be zero), and (c) that a firm always has sufficient income from some source to absorb all capital allowances due. This last assumption is somewhat extreme and obviously unrealistic in the case of newly established firms. However, in assessing alternative allowance systems *per se*, all that concerns us is the extent to which capital allowances *could* reinforce cash flow *if* such allowances could be absorbed.

Consider a firm that starts investing £500 per annum in certain machinery and assume that this machinery has a working life of five years. Further assume that the taxing authority permits only straight-line depreciation of this machinery in computing taxable profits. If the first capital allowances are received two years after the initial £500 investment then total allowances received and the percentage of gross investment that they constitute are shown in Example 2 below.

Example 2 helps draw attention to two points. Firstly the pattern of P for the new firm in its early years depends upon the rate at which assets can be depreciated for tax purposes. Generally, the more accelerated a given system of allowances, the earlier the firm will feel the full benefit of the associated

reductions in tax payable. Thus a 60 per cent initial allowance raises the value of P in period 2 above from 20 per cent to 60 per cent.

The second point concerns the equilibrium value of P that is attained when the final allowance has been received for the initial investment outlay, i.e. at the end of year 6 in Example 2. This equilibrium value of P will only be 100 per cent when gross investment remains constant over time. If gross investment is growing over time then total capital allowances received will amount to less than 100 per cent of gross investment in any year, unless it were possible to grant instantaneous free depreciation. Let the details of the above example be unchanged except that outlays now grow at 10 per cent per annum. The equilibrium value of P falls from 100 per cent to 69 per cent as shown in Example 3.

When gross investment outlays are not constant over time the equilibrium level of P will not be the same under different allowance systems. By granting higher initial allowances systems of accelerated depreciation raise the equilibrium level of P from that under straight-line depreciation, for as long as the growth is maintained. Generally, the more accelerated is our allowance system, the greater the proportion of the growing firm's investment that can be financed with tax-free depreciation funds. In assessing the extent to which different allowance systems can reinforce the firm's cash flow the pre-equilibrium pattern of P will be relevant to the newly established firm, while the equilibrium level of P will be of concern to firms in existence long enough to have received the final allowance on their initial outlays.

Table 2 below gives some indication of the extent to which allowance systems (i) to (iv) would reinforce the cash flow of a newly established firm. In computing Table 2 it was assumed that the firm's investment outlays grew at a rate of 5 per cent per annum and that this investment was in machinery with a

EXAMPLE 2

Period	0	1	2	3	4	5	6...
(i) Investment outlay	500	500	500	500	500	500	500...
(ii) Capital allowances received	—	—	100	200	300	400	500...
(ii) as a percentage of (i) i.e. P	—	—	20	40	60	80	100...

EXAMPLE 3 (all figures to nearest £)

Period	0	1	2	3	4	5	6	7...
Investment outlay	500	550	605	665	732	805	886	974...
Capital allowances received	—	—	100	210	331	464	610	671...
$P\%$	—	—	17	32	45	58	69	69...

working life of six years.

The calculation of P under system (i) is complicated by the distinction between a capital allowance and an investment grant. Since the former is granted against taxable profit while the latter is a cash payment, investment grants have been converted to a capital allowance 'equivalent' by dividing the grant by the tax rate (assumed here to be 45 per cent). Thus a grant of £200 for new machinery costing £1,000 is viewed as a capital allowance of $£200 \div 0.45 = £444$, received at the same time. The former represents a direct addition to cash flow of £200 while the latter would reduce tax payable by £200. Following this procedure the values of P under system (i) compare extremely favourably with an allowance system of type (ii) or (iii). It can be seen that the build-up of grants and allowances under system (i) is far faster than that under systems (ii) and (iii). Thus, to the extent that new firms invest in new plant and machinery, the change to system (iii) represents a weakening of their cash flow. This is even more apparent when it is remembered that in practice the grants were not dependant on the new firm earning immediate and substantial profits. Other calculations would show that system (i) would always be more advantageous than systems (ii) and (iii) for the growing new firm. If free depreciation were to be granted against profits at the end of the second year of operations the equilibrium value of P would be achieved at the end of that second year and so, to the extent that allowances were absorbed, free depreciation would represent the most *immediate* boost to the cash flow of the firm. Where a firm would not previously have attracted grants towards its investment outlays the change from (ii) to (iii) will reinforce such a firm's early cash flows, in that greater allowances will be received that much sooner. However, the added degree of acceleration under system (iii) is barely significant in Table 2. An extension of the grants scheme or introduction of free depreciation would have been far more useful for firms *ineligible* for grants, while the cash flow of new firms previously *eligible* for grants has been noticeably weakened by the change.

If we turn to consider the equilibrium values of P for the established firm we are drawn to a similar set

of conclusions. Table 3 shows equilibrium values of P for various asset lives and growth rates of gross investment. Generalised expressions used in the computation of Table 3 are to be found in the Appendix to this paper.

TABLE 3
Equilibrium values of P (%)

Asset life (years)	6	8	10
<i>Growth rate 5%</i>			
System (i)	107.5	104.5	101.7
(ii)	85.2	83.0	80.0
(iii)	85.8	85.2	84.9
(iv)	95.2	95.2	95.2
<i>Growth rate 10%</i>			
System (i)	97.6	90.8	88.2
(ii)	73.6	70.3	66.2
(iii)	74.6	74.0	73.5
(iv)	90.9	90.9	90.9

With an assumed rate of growth of 5 per cent per annum system (i) might appear to be almost *too* generous in boosting cash flow. Total allowances granted in any year (for assets of either 6, 8 or 10 year life) actually exceed investment outlays in that year. This illustrates the rare case of a government foregoing *more* in tax revenues than would be required under a strictly neutral system of taxation. The generosity is not repeated under systems (ii), (iii) or (iv), where total allowances against taxable profits in a given year are less than the investment outlay in that year. Free depreciation constitutes the second-best system where the established firm is growing relatively slowly, while the only significant benefit to be gained in a change from system (ii) to (iii) involves firms with investments in long-lived assets. Where investment is growing at 10 per cent per annum firms stand more to gain by a change from (ii) to (iii), although (i) remains a sounder method of reinforcing cash flow. Free depreciation comes into its own where asset lives are long and growth rates high. Under these conditions it could provide larger offsets to taxable profits (and hence greater tax savings) than those provided under any other of the three systems.

TABLE 2
Capital allowances received as a proportion of investment outlay at end of year n (%)

Year (n)	0	1	2	3	4	5	6	7
System (i)	—	42.3	60.5	73.4	82.7	89.3	94.1	107.5
(ii)	—	—	49.8	59.3	64.9	70.0	75.8	85.2
(iii)	—	—	54.4	63.1	69.2	75.3	76.7	85.8
(iv)	—	—	95.2	95.2	95.2	95.2	95.2	95.2

Summary

It would be unwise to generalise to any great extent from the particular examples above, oversimplified and highly specific as they are. Given the circumstances peculiar to each firm's investment programme, only that firm will be in a position to compute the gains or losses under the change to the new allowances, and even then may prefer to ignore such gains or losses. However, the above analysis does provide some indication of the relative merits of alternative allowance systems in reinforcing the cash flows of investing firms. The new capital allowances *per se* are unlikely to boost the cash flows needed to finance investment in plant and machinery to any great extent. Indeed, cash flows for investment in *new* machinery may be appreciably weakened by the change. These conclusions reinforce those reached earlier in relation to the post-tax profitability of individual investment projects. The new capital allowances provide, at best, a negligible incentive to additional investment. At worst they may well serve to decrease the incentive to investment.

Appendix

Notation:

Rate of investment grant	= g
Rate of writing-down allowance	= a
Rate of initial allowance	= b
Rate of discount	= i
Rate of corporation tax	= t
Rate of growth of investment	= r
Investment life in years	= n
Initial level of gross investment	= I

It is assumed that an investment grant is receivable *one* year after expenditure upon an asset, and that capital allowances are granted against taxable income at the end of *two* years after such expenditure. Free depreciation is taken as being granted after one year.

Individual investment projects

If we denote the present value of tax reductions plus investment grant (where applicable) given against the cost of an investment outlay as a proportion of (investment outlay \times tax rate) by R , then under the assumptions of system (i),

$$R = \frac{g}{t(1+i)} + \frac{a(1-g)[(1+i)^{n-1} - (1-a)^{n-1}]}{(1+i)^n(1+a)} + \frac{(1-g)(1-a)^{n-1}}{(1+i)^{n+1}}$$

Under systems (ii) and (iii) b represents the total first year's allowance (i.e. $b = 0.3 + a$ under system

(ii), 0.6 under system (iii)). Under systems (ii) and (iii),

$$R = \frac{b}{(1+i)^2} + \frac{a(1-b)[(1+i)^{n-2} - (1-a)^{n-2}]}{(1+i)^n(1+a)} + \frac{(1-b)(1-a)^{n-2}}{(1+i)^{n+1}}$$

Under the assumptions of system (iv), $R = \frac{I}{(1+i)}$.

Growth of total capital allowances

Denoting total capital allowances received at the end of any given year as a proportion of gross investment outlays at the start of the next year by P , then under the assumptions of system (i) the equilibrium value of P is composed of three elements,

$$(1) \quad \frac{gI(1+r)^n}{t}$$

the capital allowance equivalent of the investment grant received for investment made at start of year n ,

$$(2) \quad I(1-g)(1-a)^{n-1}$$

the balancing allowance received for the initial investment outlay,

$$(3) \quad \frac{aI(1+r)(1-g)[(1+r)^{n-1} - (1-a)^{n-1}]}{(a+r)}$$

the total of capital allowances granted at the end of year n on outlays made in years 1 to $(n-1)$.

Summing these three elements and expressing the result as a fraction of the investment outlay at the beginning of year $(n+1)$, i.e. $I(1+r)^{n+1}$, yields the equilibrium value of P under system (i).

A similar procedure yields the equilibrium values of P under systems (ii) and (iii), where the three elements to be summed are,

$$(1) \quad bI(1+r)^{n-1}$$

$$(2) \quad I(1-b)(1-a)^{n-2}$$

$$(3) \quad \frac{aI(1+r)(1-b)[(1+r)^{n-2} - (1-a)^{n-2}]}{(a+r)}$$

Finally, under system (iv), the equilibrium value of P is given by the expression $P = \frac{I}{(1+r)}$.

Note that if $r=0$, the expressions representing systems (ii), (iii) and (iv) reduce to a value of $P=1$.

Measurement of Divisional Performance

J. F. Flower

Many large British companies use the divisional form of organisation. The responsibility for running the division is delegated to a divisional manager. The company's central management remains ultimately responsible for the efficient operation of the division and normally fulfils this duty by measuring the division's performance – generally by means of a divisional profit and loss account. If the division's performance is shown to be satisfactory, the central management considers that it has fulfilled its duty at least until the next occasion for checking on performance. If the divisional profit and loss account reveals unsatisfactory performance, this is a signal for some form of action by central management – perhaps to supervise more closely the division's affairs, or to replace the manager. Often this action will be unpleasant for the manager. Therefore the way in which the division's performance is measured will have a profound effect upon the way in which the divisional manager will make decisions. The most important decisions with which he is concerned are those concerned with capital investment. There is a danger that in this area he may be induced to take what is demonstrably a wrong decision because of the way in which his division's performance is measured.

This possibility can be illustrated by means of the example given in Table 1. The divisional manager has to choose between the three projects listed there. Each involves an immediate cash outlay of £105 for a machine, followed by net cash inflows for the next three years at the end of which the machine is sold for scrap for £15. The projects are mutually exclusive,

		Projects		
		A	B	C
Machine cost	Year 0	105.00	105.00	105.00
Net cash flow	1	25.00	45.00	1.00
Net cash flow	2	45.00	30.00	1.00
Net cash flow	3	59.88	25.00	133.00
Scrap value	3	15.00	15.00	15.00

only one may be undertaken. To ease the analysis it is assumed that, over the period, the division has no other assets or income.

There is no doubt among academics as to the method that the manager should use to choose between the projects. There is only one method that will always give a decision consistent with the aim of maximising the wealth of the company's owners: discounted cash flow analysis. It is not the aim of this article to prove this point; this has been done conclusively by a number of writers. One accepted variant of discounted cash flow analysis is to calculate the net present value (NPV) of a project's cash flows, discounted at the company's cost of capital, assumed to be 10 per cent. The calculations for project A are shown in Table 2 which also gives the NPV's of the other projects. The manager should choose the project with the highest NPV provided the NPV is positive. A negative net present value indicates that a project is in absolute terms undesirable; it is preferable for the company to undertake no project at all rather than accept it. In this case, project A has the highest NPV (+£11.18) and therefore should be chosen.

Table 2

Calculation of NPV of future cash flows

Project A

t	$\left(\frac{1}{1.10}\right)^t$	Net cash flow £	Present value £
0	1.0000	-105.00	-105.00
1	0.9091	+ 25.00	+ 22.73
2	0.8264	+ 45.00	+ 37.19
3	0.7513	+ 74.88	+ 56.26
			+ 11.18

Summary:

Project	NPV
A	+£11.18
B	- 9.25
C	+ 7.93

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However, it is by no means certain that the divisional manager will choose project A. Surely he will tend to pick that project which will subsequently give the best performance for his division. Table 3 shows how his performance will be measured in the following year. It assumes that the project involves no working capital and that the machine is depreciated on the straight-line basis. Project B is shown to be more profitable than project A. Clearly there is a danger that the divisional manager will reject project A and undertake project B – an inferior project with a negative net present value indicating that under no circumstances should it be undertaken.

The essential problem is that the measure of performance is inconsistent with the method of planning. According to the planning criterion, the projects are ranked A, C, B, with an accept/reject point between C and B, i.e. if the projects were not mutually exclusive A and C should be accepted and B rejected. The crude measure of performance given in Table 3 ranks the projects C, A, B, with the accept/reject point between C and A. C gives rise to acceptable performance, A and B to unacceptable performance. The method used to measure performance yields a completely wrong answer. This can only lead to wrong decisions by divisional management. The question is whether it is possible to devise a means of measuring performance that is consistent with the discounted cash flow method of capital investment planning. This question will be posed firstly in relation to the NPV method that has already been introduced and secondly in relation to the other accepted variant of discounted cash flow analysis—the internal rate of return method.

Table 3

Division's profits in year 1

	Project		
	A	B	C
	£	£	£
Sales less cash expenses	25.00	45.00	1.00
Depreciation	30.00	30.00	30.00
Profit (loss)	(5.00)	15.00	(29.00)

The NPV method yields an answer (*the NPV*) which is an amount of money (+£11.18 in Table 2), and hence the appropriate measure of performance would be in similar terms, i.e. a certain sum of money. It is a reasonable objection to the measure used in Table 3 above that a long-lived project should not be judged purely on the results of one year; the whole life should be taken into account. Table 4 gives the

total profits of the three projects over their lifetime of three years. This measure of performance provides neither the correct ranking nor the correct accept/reject point. C is shown to have better performance than A; B shows a positive overall profit, which gives the erroneous impression that it is an acceptable project. The reason for the incorrect ranking of Table 4 is that it gives the same weight to each year's profits regardless of when it is earned. Discounted cash flow analysis is based on the principle that cash received now is worth more than cash to be received in the future since it can be invested to earn interest in the interim.

Table 4

Total profits over three years

t	Project		
	A	B	C
	£	£	£
1	- 5.00	+15.00	- 29.00
2	+15.00	0.00	- 29.00
3	-29.88	- 5.00	+103.00
Total	+39.88	+10.00	+ 45.00

Therefore future cash receipts are multiplied by a discount factor to reduce them to a smaller NPV. The same principle can be applied to profits. This has been done in Table 5, which shows the net present value of the future *profits* of the three projects. Here is a measure of performance that gives the same ranking as Table 2: A, C, B. However, B is shown to have a positive net present value of profits, indicating (wrongly) acceptable performance. Thus the measure of performance used in Table 5 is not consistent with the correct accept/reject decision.

Table 5

Calculation of NPV of future profits: Project A

t	$\left(\frac{1}{1.10}\right)^t$	Profit £	Present value £
1	0.9091	- 5.00	- 4.54
2	0.8264	+15.00	+12.39
3	0.7513	+29.88	+22.45
			+30.30

Summary:

Project	NPV of future profits
A	+£30.30
B	+ £9.87
C	+£27.05

The reason is very simple. The calculations in Tables 2 and 5 are identical except for the treatment

of the cost of the machine. This difference is brought out in Table 6. In Table 2 the cost is taken as the initial outlay less the discounted scrap value: a net present value of £93.73. In Table 5 the cost of the machine is taken into account by means of the depreciation charge of £30.00 per year; their total net present value is £74.61, £19.12 less than the true cost of the machine used in Table 2.

Table 6

Cost of Machine

(a) Per table 2: initial outlay less present value of scrap value.		
£105.00 - £15.00 × 0.7513		£93.70
(b) Per table 5: present value of depreciation charges.		
£30.00 × 0.9091	£27.27	
£30.00 × 0.8264	24.78	
£30.00 × 0.7513	22.53	
		£74.58
		£19.12

The problem is that conventional accounting statements understate the cost of capital items. This can be avoided by charging interest on capital employed: by deducting in the divisional profit and loss account an interest charge calculated on the basis of the division's net assets. This procedure has been advocated by Professor Solomons, who uses the term 'residual income' to describe profit after deduction of interest. The application of this procedure to project A is given in Table 7. The division is charged interest at 10 per cent (the company's cost of capital) of the book value of assets at the start of each year. Its only asset is the machine which is depreciated on the straight-line basis. It is assumed that cash surpluses generated by the project are remitted to the head office. The net present value of the residual income

Table 7

Residual income of project A

	Year		
	1	2	3
	£	£	£
Sales less cash expenses	25.00	45.00	59.88
Depreciation	30.00	30.00	30.00
Profit before interest	(5.00)	15.00	29.88
Interest	1.50	7.50	4.50
Residual income	(15.50)	7.50	25.38
<i>Note</i>			
Book value of machine at start of year:	105.00	75.00	45.00

of project A is calculated in Table 8; it is identical with the net present value of the project's cash flows shown in Table 2. This proves Professor Solomons' claim that residual income is 'the long-run counterpart' of 'the maximisation of the discounted present value of the enterprise' - a claim that has led to some controversy.

Table 8

Net present value of residual income: Project A

<i>t</i>	$\left(\frac{1}{1.10}\right)^t$	Residual income £	Present Value £
1	0.9091	-15.50	-14.09
2	0.8264	+ 7.50	+ 6.20
3	0.7513	+25.38	+19.07
			+11.18

The use of the concept of residual income has led to a measure of performance that is consistent with the net present value method of investment planning. However, for the divisional manager to be motivated correctly with this measure, he must:

1. consider the whole life of the project, not just certain years in isolation, and, in addition,
2. discount future cash flows at the company's cost of capital.

Table 9

Residual income for year 1

	Project		
	A	B	C
	£	£	£
Sales less cash expenses	25.00	45.00	1.00
Depreciation	30.00	30.00	30.00
Profit before interest	(5.00)	15.00	(29.00)
Interest	10.50	10.50	10.50
Residual income	(15.50)	4.50	(39.50)

Provided the first requirement can be met the second does not seem impossible. The later year's profits are more distant in time and their influence on the manager's decision will be correspondingly muted. It is not impossible that he will make exactly the right adjustment to the figures for future years. This would occur if he were paid a commission calculated as a percentage of profits and his personal rate of time preference were the same as the company's cost of capital.

The first requirement is the major problem. Table

9 shows the divisional profit and loss account for the first year using the concept of residual income. Project B is wrongly shown as performing better than project A; it even earns a small profit. In the long run A is far better than B. How can its short-term performance be measured in a way consistent with the longer run?

To a certain extent the conventions of accrual accounting may assist. The practice of accounting for stock, debtors and creditors will convert an uneven cash flow into a relatively even profit flow. It seems probable that the procedures of accrual accounting grew up in response to dissatisfaction among users of accounts with simple cash accounting. If profit were measured simply as the excess of cash receipts over cash payments, it would tend to fluctuate in an irrational fashion under the influence of such factors as delays in paying creditors – factors which would have an effect upon the measure of performance out of all proportion to their effect upon the real performance of the firm. By the simple straightforward adjustments for stocks, debtors and creditors, many of these fluctuations could be ironed out; the resulting account would give a much less confusing picture of the true performance of the firm.

In the case of project A, it may be that the relatively low cash flow in year 1 was the result of producing in that year goods costing £20 that were not sold until year 3. Accrual accounting would take this into account by creating an asset 'stock £20' in the balance sheet at the end of year 1 and reducing the expenses of that year accordingly. Table 10 shows the effect of these adjustments on the accounts. The profit in each year is very much more even than it was before the adjustment. Hence the first year's profit is a far better indication of the profit in subsequent years, a better forecast of the project's profitability over its life.¹

There are four basic ways in which, by using the conventions of accrual accounting, the profit flow can be made different from the cash flow. They are outlined in Table 11. There are two basic types of adjustments – those which cause current profits to be

¹ However it should be noted that, even if the cash flow were the same in each year, the residual income for earlier years would be lower than for later years. This is apparent from Table 10 where the profit before depreciation is £45 for both years 1 and 2 yet residual income in year 1 is £1 lower than in year 2. The reason is the relatively larger interest charge in year 1; the amount of interest charged per year declines as the book value of the machine is written down. To achieve an even measure of residual income in each year in these circumstances, it is necessary to use a method of depreciation that produces increasing annual charges over time. This is the characteristic of the annuity method of depreciation, which does in fact have the effect of equalising the residual income each year of a project that has equal cash flows.

Table 10

Residual Income with working capital: Project A

	0	Year		
		1	2	3
<i>Balance sheets</i>				
	£	£	£	£
Machine	105.00	75.00	45.00	0.00
Stock	0.00	20.00	20.00	0.00
Total assets	105.00	95.00	65.00	0.00
<i>Profit and loss accounts</i>				
Sales less expenses	45.00	45.00	39.88	
Depreciation	30.00	30.00	30.00	
Profit before interest	15.00	15.00	9.88	
Interest	10.50	9.50	6.50	
Residual income	4.50	5.50	3.38	

higher than current cash flows, characterised in Table 11 as 'borrowing profits'; and those which cause current profits to be lower than current cash flows, described in Table 11 as 'lending profits'. With both types of adjustments the net present value of residual income is still equal to the net present value of cash flows.

Table 11

'Borrow' profits from future periods

1. Cash inflow of subsequent period treated as income of current period (e.g. debtors).
2. Cash outflow of current period treated as expense of subsequent period (e.g. stock).

'Lend' profits to future periods

3. Cash inflow of current period treated as income of subsequent period (e.g. rent received in advance).
4. Cash outflow of subsequent period treated as expense of current period (e.g. creditors).

This is shown in Table 12, which considers the case where £X is 'borrowed' from next year's cash flow to increase this year's profit. By similar reasoning, if profits are 'lent' to future periods the reduction in current profits will be equal to the present value of the increase in future profits. Whatever the amount 'borrowed' or 'lent' it is no effect on the present value of residual income.

This fact has several interesting implications. When residual income is used as the measure of performance, managers will be less inclined to overstate profits in the current period by overvaluing assets such as stock, for this would lead to an increase in

Table 12
Effect of £X 'borrowed' from next year

(a) Increase in current year's profits:	£X
(b) Reduction in next year's profits:	
(i) cash flow borrowed	£X
(ii) increase in interest charge on assets at rate r	£Xr
	<hr/>
	£X + Xr
Net present value of change in profits: (Increase this year less NPV of reduction next year)	
	$£X - (£X + £Xr) \times \frac{1}{1+r} = 0$

their assets on which they are charged interest. Any increase in profits in the current period would be less than the reduction in profits in the succeeding period. This is not the case when managers are not charged interest on capital employed. Here the reduction in future profits is exactly equal in absolute terms (and less in discounted terms) to the increase in current profits; there is a temptation to defer recognition of losses year after year. In addition, two important comments can be made about the accounting procedures to be followed by the company if it wishes to ensure that the net present value of future residual income is equal to the net present value of cash flows. Firstly, interest should be charged on the net book value of the division's assets less liabilities. Assets should include all capitalised expenditure, including intangible assets such as patents. They should be valued after deducting all amounts written off against profits by way of depreciation and amortisation. Liabilities should include all amounts that represent future cash outflows (e.g. creditors) or current inflows not yet credited to profits (e.g. rents received in advance). Secondly, profits should be calculated after deducting all reductions in the value of assets. It should not be permitted to write off items 'below the line'. This practice, one of dubious utility in any case, will cause the net present value of residual income to be greater than the net present value of cash flows.

It is however quite possible that the normal adjustments of accrual accounting will not result in a sufficient smoothing of profits so as to lead to a correct assessment of a project's performance in its early years. Thus the relatively low cash flow in the first years of project A may be caused by expenditure on training staff or in building up goodwill among customers, neither of which would be regarded as creating an asset according to generally accepted accounting conventions. In this event the Profit and Loss account for the first year will be as in Table 9, giving a short-term measure of performance incon-

sistent with the project's prospects in the long term. There is no simple answer to this problem. In fact, the only way to achieve a completely consistent short-term measure of performance is to value the asset as the net present value of its future cash flows.

Table 13

Project A

Value of asset as NPV of future cash flows

Year	$\left(\frac{1}{1.10}\right)^t$	Cash flow £	NPV £
At start			
1	0.9091	+25.00	+22.73
2	0.8264	+45.00	+37.19
3	0.7513	+74.88	+56.26
			<hr/>
			+116.18
At end of year 1			
2	0.9091	+45.00	+40.91
3	0.8264	+74.88	+61.88
			<hr/>
			+102.79
At end of year 2			
3	0.9091	+74.88	+68.07
			<hr/>

Residual income using this method of asset valuation

	Year		
	1	2	3
	£	£	£
Sales less cash expenses	25.00	45.00	59.88
Depreciation	13.39	34.72	53.07
	<hr/>	<hr/>	<hr/>
Profit before interest	11.61	10.28	6.81
Interest	11.61	10.28	6.81
	<hr/>	<hr/>	<hr/>
Residual income	0.00	0.00	0.00

The application of this rule is given in Table 13. The division is shown to make an immediate profit of £11.18 at the time that the project is undertaken followed by zero profit in the next three years, thus indicating a return of exactly 10 per cent on capital employed during this period. This is the only way of measuring performance that is completely consistent with the NPV rule of investment planning, since it reflects precisely the information given by the NPV calculation: that the firm is better off at the present time by the amount of the present value. To prove this, consider the possibility of a fourth project, in addition to A, B and C – to sell for £10 the patent rights on which the other three projects depend. This project would have the cash flow pattern of +£10, £0, £0, £0. Under any measure of performance based on accrual accounting this project would be ranked superior to project A in the (very) short-run

since it would show an immediate profit of £10. Only the valuation procedure in Table 13 would show project A to be superior. However, this requires writing up the value of the asset above cost at the start, followed in later years by very irregular depreciation charges. It is inconceivable that these procedures would be acceptable to accountants.

The conclusion to be drawn is that it is possible to develop a measure of performance that, *over the life of the project*, is consistent with the NPV rule of investment planning. To ensure that this measure of performance is consistent with the accept/reject decision reached using the NPV rule, it is necessary to charge interest on capital employed. It is more difficult to develop a measure of performance that is consistent with the NPV rule in the short run. An intelligent use of the accepted methods of accrual accounting will often lead to a reasonably consistent measure of performance. However, there is no certainty that in general this will happen. A measure of performance that is completely consistent with the NPV rule throughout the life of a project requires the use of methods of valuation unacceptable to most accountants.

NPV is not the only method by which discounted cash flow analysis can be applied to investment planning. Another accepted method is to calculate the internal rate of return (IRR) of the project. The IRR is defined as the rate of interest at which future cash inflows are equal to the current capital outlay; it is essentially the rate of return earned on the capital outlay. The IRRs of the three projects are given in Table 14 together with the calculations of the IRR for project A. Using IRR the projects are ranked A, C, B; B is indicated to be absolutely undesirable since its internal rate of return is less than the firm's cost of capital. This is the same ranking and accept/reject point as given by the NPV method. In fact, only in the most unusual circumstances will the two methods give different answers for projects having the same life and capital outlay.

As the IRR method gives an answer in the form of a percentage rate per year, it is appropriate to look for a measure of performance expressed in similar terms. The accounting rate of return is such a measure. It is a widely used statistic calculated as the ratio of the profit for a year to the capital employed at the start of the year. These figures for the three projects for the first year are given in Table 15. Using the accounting rate of return as the measure of performance, the projects are ranked B, A, C and only B is shown to be absolutely desirable. It is clear that here there is exactly the same problem as with the NPV method: inconsistency between the method of planning and means of measuring performance.

Table 14

Internal rate of return (IRR)

Project A	15.00%
Project B	4.80%
Project C	12.72%

Proof that IRR of Project A is 15.00%

t	$\left(\frac{1}{1.15}\right)^t$	Cash flow £	Net present value £
1	0.8696	25.00	21.74
2	0.7561	45.00	34.03
3	0.6575	74.88	49.23
			105.00
Initial capital outlay			£105.00

Table 15

Accounting rate of return – first year

Project	Profit (Year 1) £	Capital (Start of year 1) £	Accounting rate of return
A	-£5	£105	$\frac{-5}{105} = -4.76\%$
B	+£15	£105	$\frac{+15}{105} = +14.29\%$
C	-£29	£105	$\frac{-29}{105} = -27.62\%$

It is more reasonable to calculate the accounting rate of return over the three years of the projects' lives. This has been done in Table 16. On examining the average rate of return per year, two points are apparent. Firstly, there is an error in ranking; A is shown to be inferior to C. Secondly, the accounting rates of return are nowhere near the internal rates of return. It can be argued that the method of calculation used in Table 16 gives undue weight to high rates of return earned on low asset values in the later years of the projects' lives.

This bias can be rectified using the type of average shown in Table 17. Here the rate is calculated as the ratio of the average profit to the average assets. This average would be appropriate if the division at any one time comprised three projects of type A – one in the first year, one in the second year and one in the third year of its life. Its accounting rate of return would then be as given in Table 17. Although the revised accounting rates of return are closer to the internal rate of return, they are still very poor approximations and the incorrect ranking (C better than A) persists.

There is, in fact, only one way of ensuring that the Profit and Loss account indicates an accounting rate

Table 16

Accounting rate of return – average over life of project

<i>t</i>	<i>Project A</i>			<i>Project B</i>			<i>Project C</i>		
1	$\frac{-5.00}{105.00}$	=	- 4.8%	$\frac{+15.00}{105.00}$	=	+14.3%	$\frac{-29.00}{105.00}$	=	-27.6%
2	$\frac{+15.00}{75.00}$	=	+20.0%	$\frac{0.00}{75.00}$	=	0.0%	$\frac{+29.00}{75.00}$	=	+38.7%
3	$\frac{+29.88}{45.00}$	=	+66.4%	$\frac{-5.00}{45.00}$	=	-11.1%	$\frac{+103.00}{45.00}$	=	+228.9%
Total of 3 years' rates			+81.6%			+3.2%			+162.6%
Average over 3 years			+27.2%			+1.1%			+54.2%

Table 17

Accounting rate of return – alternative calculation of average over life of project

<i>Project</i>	<i>Average profits</i>	<i>Average capital employed</i>	<i>Accounting rate of return</i>
A	13.29	75.00	+17.7%
B	3.33	75.00	+ 4.4%
C	15.00	75.00	+20.0%

of return equal to the internal rate of return. This is to state the asset in the accounts at a value equal to the net present value of future cash flows, using as the rate of discount the project's internal rate of return. This procedure is illustrated in Table 18, which uses the data of project A.

It follows from the definition of the internal rate of return that this will lead to an asset value at the time of acquisition equal to an asset's cost. This is consistent with accepted accounting conventions. However, subsequent deductions for depreciation are very

Table 18

Value asset at NPV of future cash flows at discount rate equal to IRR

<i>Project A</i>				
<i>Valuation of asset</i>				
<i>(a) At start (See Table 14)</i>				
				£ 105.00
<i>(b) At end of year 1</i>				
<i>Year</i>	$\left(\frac{1}{1.15}\right)^t$	<i>Cash flow</i>	<i>NPV</i>	
			£	
2	0.8695	45.00	39.13	
3	0.7561	74.88	56.62	
				95.75
<i>(c) At end of year 2</i>				
<i>Year</i>	$\left(\frac{1}{1.15}\right)^t$	<i>Cash flow</i>	<i>NPV</i>	
		£	£	
3	0.8695	74.88	65.11	65.11
<i>Profit and loss accounts</i>				
		<i>Year</i>	<i>1</i>	<i>2</i>
			£	£
Sales less cash expenses		25.00	45.00	59.88
Depreciation		9.25	30.64	50.11
Net profit		15.75	14.36	9.77
Value of asset at start of year		105.00	95.75	65.11
Accounting rate of return		15.00%	15.00%	15.01%

Table 19

Value asset at NPV of future cash flows at discount rate equal to IRR

<i>Project C</i>			
<i>Profit and loss accounts</i>			
	<i>Year</i>	<i>1</i>	<i>2</i>
		£	£
Sales less cash expenses	1.00	1.00	133.00
<i>Adjustments to book value of asset</i>			
Appreciation	12.36	13.93	
Depreciation	—	—	116.29
Net profit	13.36	14.93	16.71
Value of asset at start of year	105.00	117.36	131.29
Accounting rate of return	12.72%	12.72%	12.72%
<i>Book value of asset over its life</i>			
			£
Start: Cost			105.00
Year 1: Appreciation			12.36
End of year 1: book value			117.36
Year 2: Appreciation			13.93
End of year 2: book value			131.29
Year 3: Depreciation			116.29
End of year 3: scrap value			15.00

irregular and follow no clear-cut pattern. In fact, if the cash flows in early years are very low, this method of asset valuation would entail the writing up of an asset's value. This is illustrated in Table 19 which shows the application of this method to project C. The Profit and Loss account shows a rate of return of precisely 12.72 per cent in each year – but this requires recording appreciation in the asset's value in the first two years.

It is not accepted accounting practice to use methods of depreciation that result in irregular amounts being written off assets each year; still less is appreciation of assets permitted. In general, therefore, using conventional methods of depreciation the accounting rate of return of a division will not equal the internal rate of return of the underlying projects. It is, however, possible to describe the special circumstances in which the three accepted methods of depreciation (annuity method, straight-line and reducing balance) will lead to the correct accounting rate of return. For this purpose it is necessary to invent three more projects, D, E and F, details of which are given in Table 20.

Table 20

	Year	Projects		
		D	E	F
		£	£	£
Machine cost	0	105.00	105.00	105.00
Net cash flow	1	37.69	40.50	60.60
Net cash flow	2	37.69	37.50	31.69
Net cash flow	3	37.69	34.50	16.67
Scrap value	3	15.00	15.00	15.00

Annuity method depreciation

The annuity method of depreciation will give the correct answer if the project's cash flows are equal in each year. Project D is in this category. Table 21 shows the calculations necessary to apply the annuity method of depreciation to this project. It should be noted that the rate of interest used in this calculation is equal to the internal rate of return of the project (10 per cent). The net amount of depreciation in each year is made up of two elements: an annual charge of £37.69 (being the annuity having a present value equal to the capital outlay less scrap value) and in-

Table 21

Calculations for annuity method depreciation

Project D					
Annual charge: $(105.00 - 15.00 \times \frac{1}{1.10^3}) \times \frac{1}{\frac{1}{0.10} - \frac{1}{1.10^3}} = £37.69$					
Machine account					
Year		£	Year		£
1	Cost of machine	105.00	1	Annual charge	37.69
	Interest at 10%	10.50		Balance c/d	77.81
		<u>115.50</u>			<u>115.50</u>
2	Balance b/d	77.81	2	Annual charge	37.69
	Interest at 10%	7.78		Balance c/d	47.90
		<u>85.59</u>			<u>85.59</u>
3	Balance b/d	47.90	3	Annual charge	37.69
	Interest at 10%	4.79		Cash (Scrap Value)	15.00
		<u>52.69</u>			<u>52.69</u>

Net amount of depreciation per year

	Year		
	1	2	3
	£	£	£
Annual charge	37.69	37.69	37.69
less interest	10.50	7.78	4.79
	<u>27.19</u>	<u>29.91</u>	<u>32.90</u>

terest at 10 per cent on the book value of the plant. Table 22 shows the division's Profit and Loss accounts using annuity method depreciation. The accounting rate of return each year is, in fact, 10 per cent, equal to the internal rate of return. This is an interesting fact since projects with equal (or near equal) cash flows per year probably occur frequently in practice.

Table 22

Project D: Annuity method depreciation

	Year		
	1	2	3
	£	£	£
Sales less cash expenses	37.69	37.69	37.69
Depreciation	27.19	29.91	32.90
Net profit	10.50	7.78	4.79
Value of asset at start of year	105.00	77.81	47.90
Accounting rate of return	10.00%	10.00%	10.00%

Straight-line depreciation

It is possible to devise a project with cash flows of such a pattern that when the straight-line method of depreciation is employed the division's accounting rate of return is equal to the project's internal rate of return. Project E (see Table 20) is in this category. The divisional Profit and Loss accounts showing an accounting rate of return of 10 per cent are shown in Table 23. Project E's cash flows decline over time, but it should not be thought that the straight-line method of depreciation is appropriate for all projects with declining cash flows. An inspection of Table 23 reveals that the cash flows should decline by an equal absolute amount each year (£3.00 in the case of project E) and that this amount should be equal to the annual depreciation charge multiplied by the internal rate of return. It seems improbable that many projects will have cash flows of anything similar to this pattern.

Table 23

Project E: Straight-line depreciation

	Year		
	1	2	3
	£	£	£
Sales less cash expenses	40.50	37.50	34.50
Depreciation	30.00	30.00	30.00
Net profit	10.50	7.50	4.50
Value of asset at start of year	105.00	75.00	45.00
Accounting rate of return	10.00%	10.00%	10.00%

Other research has shown that the straight-line method of depreciation leads to the correct answer when the division is growing (adding to its net assets) at the same rate per annum as the internal rate of return of the underlying projects. This situation would occur only in a very small number of cases. The conclusion to be drawn is that the straight-line method of depreciation will lead to an incorrect accounting rate of return in most circumstances.

Reducing balance depreciation

A similar exercise can be carried out for the reducing balance method of depreciation. Project F (see Table 20) has the rather strange pattern of cash flows which, when combined with the reducing balance method of depreciation, leads to the correct accounting rate of return. This is shown in Table 24. The rate of depreciation used in Table 24 is 47.72 per cent per year; this will reduce the book value of the machine to its scrap value of £15 by the end of three years. The characteristic of the cash flows of project F is that they decline by the same percentage rate each year. It is probable that there is a large class of projects whose cash flows decline by the same percentage rate each year. However, it is very unlikely that this will be the same percentage rate as that used in the depreciation calculation, which is a highly artificial rate with the sole aim of reducing the book value of an asset to its scrap value at the end of its life.

Table 24

Project F: Reducing balance depreciation

	Year		
	1	2	3
	£	£	£
Sales less cash expenses	60.60	31.69	16.57
Depreciation	50.10	26.20	13.70
Net profit	10.50	5.49	2.87
Value of asset at start of year	105.00	54.90	28.70
Accounting rate of return	10.00%	10.00%	10.00%

In conclusion, to ensure that in general the Profit and Loss account reflects the same return as the underlying projects requires the use of methods of asset valuation and depreciation unacceptable to most accountants. The straight-line and reducing balance methods of depreciation will lead to the correct accounting rate of return in only the most exceptional circumstances. The annuity method of depreciation will lead to the correct answer when the project's cash flows are evenly distributed over its life.

It has been shown that only in a minority of cases

will the divisional Profit and Loss account provide a measure of performance consistent with the method used to select projects at the planning stage. The reason is that to achieve general consistency between the measure of performance and the method of planning requires procedures for asset valuation and depreciation unacceptable to most accountants. It would seem that financial controllers of divisionalised firms have an interesting choice. They can adopt those accounting conventions that will lead to a correct measure of performance more often than other conventions. These would presumably require charging interest on capital employed if the firm used the NPV method of investment planning and using the annuity method of depreciation if the firm used IRR. Alternatively, they can decide to use unconventional methods of asset valuation and depreciation – at least for their internal accounts. It is possible to calculate depreciation figures that will give precisely the right result. These are given in Table 3 for the

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NPV method and Table 18 for the IRR method. These depreciation (and appreciation) figures can be calculated from the data used by the division at the planning stage. In subsequent years, when the projects are in operation, they can be used in drawing up the division's Profit and Loss accounts. If the projects fulfil the claims made for them by the division, this will be reflected in that division's accounts. They will show satisfactory performance; a zero profit after charging interest on capital employed if the NPV method is used, or an accounting rate of return equal to the internal rate of return of the project if IRR is used. If the project does not operate according to plan (i.e. its cash flows are less than were expected) then the division will report substandard performance. In many ways this would seem to be an ideal method of control – any deviation from plan being immediately apparent. Perhaps this will persuade some enterprising controller at least to experiment with it.

Some Guidelines for Acquisitions

A. A. Buckley

During recent years there has been a marked increase in the amounts spent on mergers and acquisitions in the UK. This trend, summarised in Table 1, reached a peak in 1968. Total consideration paid in respect of UK acquisitions amounted in 1968 to well over three times the sum paid in 1964, though the total number of such acquisitions had fallen steeply from 939 in 1964 to 598 in 1968. Clearly this means that the average purchase price paid in a takeover situation has expanded more than five-fold over this period.

TABLE 1
Consideration involved in UK Acquisitions
and Mergers 1964-70
Figures in £ million

	Consideration - Acquisi- tions	Mergers	Total
1964 (Old Population)	502		502
1965	507		507
1966	447		447
1967	822		822
1968	1,779	534	2,313
1969	894	15	909
1969 (New Population*)	1,091	15	1,106
1970	1,186	105	1,291

It is too early to assess the impact of the bulk of 1968 acquisitions either in terms of contribution to the UK, or from the standpoint of the acquiring company. However, G. D. Newbould's study of

acquisition activity¹ in the UK during the 1968 boom throws doubt upon the achievement by most companies of the sort of gains necessary to justify the prices paid. Similarly, case histories of acquisition and subsequent integration in the USA show a disturbing lack of evidence of real success. Any company embarking on a policy of acquisition – for whatever reason – should therefore ask itself how it can direct its strategy so as to avoid the pitfalls inherent in acquisition management.

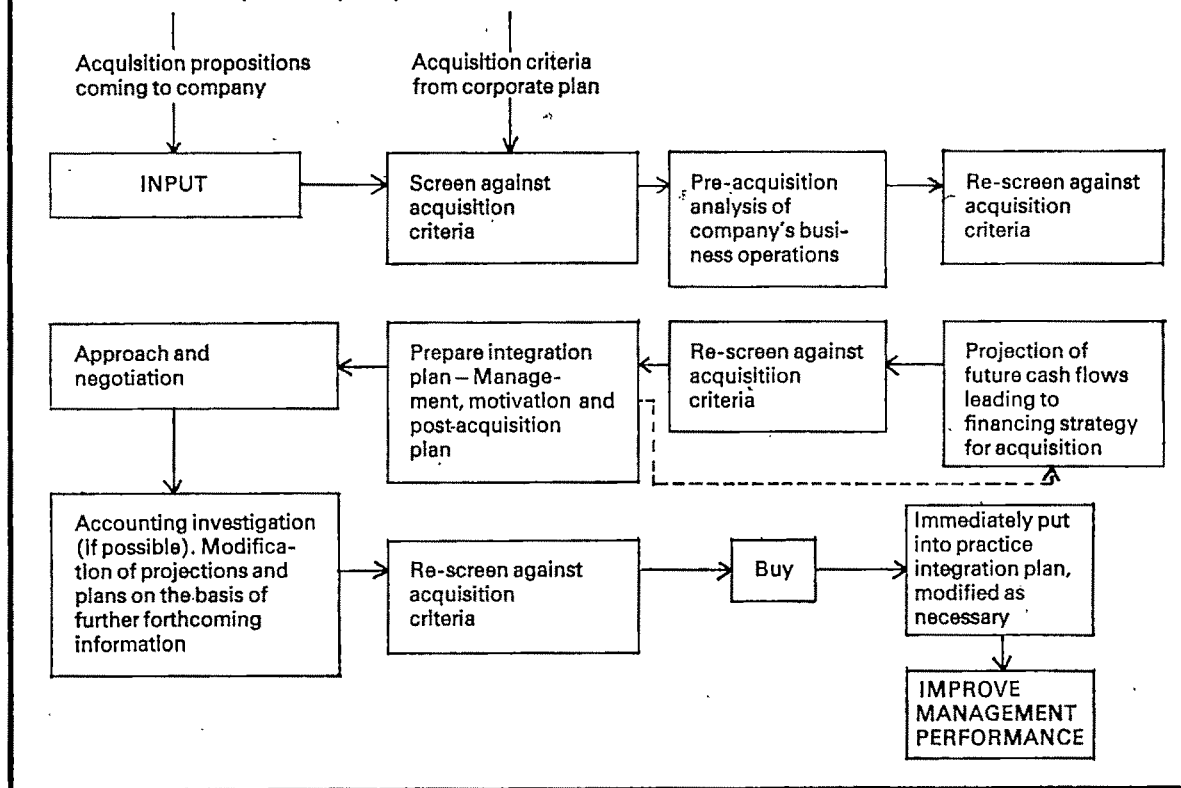
That pitfalls exist is well borne out of the available evidence. A survey was undertaken by John Kitching² into the out-turns of 69 mergers completed between 1960 and 1965 in the USA. Some 30 per cent were classed as varying degrees of failure. A study,³ again based on US practice and commissioned by Booz Allen and Hamilton, reported that only 64 out of 120 companies making acquisitions would, given their time again, acquire the same companies that they did.

Newbould's research,⁴ covering a cross-section of UK acquisitions made in 1967 and 1968, seems to indicate a fairly low level of success in financial terms. This view is endorsed by ex-management consultant David Hargreaves⁵ (now Chairman of Hestair Ltd, a company committed to growth by acquisition) who is on record as stating that, although 90 per cent of mergers in this country are agreed ones, the success rate is merely one in nine.

This article focuses first upon guidelines designed to overcome problems in the pre-acquisition phase, then looks at the financial evaluation of acquisition possibilities, and finally on management in the post-acquisition period. Whilst the second phase is of most relevance to the accountant in business, the financial evaluation is a function of the overall acquisition strategy, an area involving the accountant or financial director. In any case acquisition strategy

* The above figures, based on Board of Trade research, are not wholly comparable because of the changed population over the period. Up to 1969, the figures are based on those covered by the BOT's regular analysis of UK company accounts. Thereafter, the analysis has been extended to include all acquisitions and mergers reported in the Press. The main difference is the inclusion in the new population of companies mainly trading overseas, industrial holding companies, shipping and agricultural companies and some smaller companies.

CHART 1
Framework for acquisition policy



should lead towards the achievement of the company's long-range planning objectives.

A synopsis of the suggested framework for individual acquisition policy is shown in the flow diagram above. This paper broadly follows the lines of flow on the chart.

Acquisition objectives

It is immediately apparent – and this is highlighted in Chart 1 – that the firm, in pursuing its acquisition strategy, should constantly be screening the potential takeover candidate against a series of criteria that sum up the firm's requirements from any new acquisition; criteria consistent with the firm's long-term objectives in the company's corporate plan. Throughout this article the view has been taken that the maximisation of the present value of the owners' investment in the company is the objective that makes most economic sense.

However, empirical studies of companies' actual behaviour indicates that managers frequently pursue other goals. For example, Baumol⁶ instances cases where firms try to maximise sales subject to the constraint that a satisfactory rate of return on invested capital should be achieved. In such examples it is argued that the managers of the companies concerned bask in the prestige and market power achieved at

the expense to the shareholder of uneconomic concentration on sales. Cyert and March⁷ argue:

'that the goals of a business firm are a series of more or less independent constraints imposed on the organisation through a process of bargaining among potential coalition members and elaborated over time in response to short-run pressures.'

A similar picture of the firm has also been suggested in the theory of managerial capitalism,⁸ which implies that:

'... top management, owning little or no equity in the firm, has three main motives:

- (i) growth, because growth provides job satisfaction, job expansion, higher salaries, higher bonuses and prestige;
- (ii) continuity of employment, which means for the management team as a whole, avoidance of involuntary takeover, and
- (iii) reasonable treatment of shareholders and generally good relations with the financial world.⁹

All the above theories of corporate objectives suggest the imposition of constraints upon the financial objective of profit maximisation, the conclusion being that the fiscal goal might be restated as the maximisation of the present value of the firm to the shareholders subject to certain constraints which vary from company to company and from time to time.

In any case, even if behaviourally the economist's concept of profit maximisation does not appear to be universally true, this approach can be justified since from the standpoint of business efficiency the company should know what it foregoes by pursuing some policy other than the profit maximising one.

I propose to look upon corporate objectives in terms of maximising the present value of the ultimate owners of the company. The value of this investment is reflected in cash flows that accrue to ordinary shareholders – being, generally, the ultimate owners of the company – both in terms of dividends and capital gains realised when the shareholder sells out. This objective may be restated as maximising long-term growth in share price and dividend. To the extent that both of these factors are related to the level of earnings per share – as the share price is through the P/E ratio; and the dividend is through the dividend cover – achieving maximum long-term growth in earnings per share* will be a highly significant factor in attaining the company objective.

The placing of the corporate objective and the corporate plan at the first step of the firm's acquisition strategy ensures that resources, which might most profitably be used to expand existing business activities, are not dissipated in some new direction with reduced chances of success.

Equally, the in-depth study of the firm's own capabilities that is an integral aspect of the corporate plan, if used as a guide in selecting merger candidates, will increase the likelihood of a successful acquisition programme.

The corporate plan will generally have focused upon the firm's strengths and weaknesses, and it is in the firm's strengths that the greatest probability of successful acquisition lies. Following identification of these strengths, the plan should have made explicit the strategy that underlies the success. The question that should therefore be asked is – can we exploit our existing formula for success in the case of the company acquired? An example of how failure to locate the key criterion underlying a business's achievements can lead to subsequent failure in a takeover is instanced by Mace and Montgomery.¹⁰

'A basic resin company . . . bought a plastic boat manufacturer because this seemed to present a controlled market for a portion of the resin it produced. It soon found that the boat business was considerably different from the manufacture and sale of basic chemicals. After a short but unpleasant experience in manufacturing and trying to market what was essentially a consumer's item, the manage-

ment concluded that its experience and abilities lay essentially in industrial rather than consumer-type products.'

That companies skilled in the art of the takeover formulate and rigorously apply a set of acquisition criteria consistent with the company's overall strategy and growth objectives is borne out by the findings of John Kitching's merger study¹¹ in the USA. Kitching underlines the suggestion that takeover rules come first by stating that:

'the first, and most important, task is to develop a set of acquisition criteria beforehand. Armed with this, the successful acquiring company *selects* rather than *reacts*.'

A company in his investigation used the following criteria:

1. Management's track record in the company being considered for acquisition should be better than the industry average in terms of return on assets – on the down side, as well as on the up side, of business cycles.
2. We will only buy into old industries which are "non-glamour".
3. We will buy companies with low price-earnings ratios. (The actual average in this case is 6.5 times earnings.)
4. We seek to buy assets which are readily convertible into cash.
5. The top executive of the company in question *must* stay on.
6. These shall be our minimum sales volume criteria:
 - (a) For entry into a new field – \$100 million
 - (b) For entry into a new market – \$20 million
 - (c) To round out a product line, if already in the market – \$1 million.'

Although an increasing number of companies now treat acquisitions as part of the overall corporate strategy, a surprising number¹² of firms in the USA 'initiate programmes of search, evaluation and negotiation before they have even defined their goals'. Certainly in this country, this type of acquisition strategy is the rule rather than the exception. For example:

'a merger broker claimed in 1968 that out of 400 companies on his register who were interested in acquisitions, some 30 per cent had only vague policies or no policy at all. Yet such a policy is essential to ensure that the company makes an acquisition in line with its profile and objectives.'¹³

The type of merger approach (sometimes called the 'golf course' merger), in which the acquiring company reacts to opportunities, rather than actively planning

* Calculated in accordance with the Institute's exposure draft ED4 on earnings per share.

its takeover strategy, may prove satisfactory on occasions, but chances of success are clearly below those of a planned acquisition programme.

Too frequently the merger objective is corporate aggrandisement – the ‘tallest chimney syndrome’. Whilst the desire to own more shops than one’s competitors may mean enhanced profit potential because of market dominance, this sort of acquisition policy should not be pursued without reference to the company’s screening criteria.

In formulating screening criteria, company size is important. As an example of the dangers that arise through size incompatibility, H. M. Strange¹⁴ instances:

‘the case of a large international chemical company that several years ago decided to integrate its operations by finding outlets for its plastic polymers. . . . The company acquired a number of tiny plastic formulators in order to get some experience of the market. It dutifully refused to worry about these insignificant portions of its total business, and in the first two years of operations, this attitude cost the company £2 million, plus the inevitable and expensive drain on management time.’

The usual cause of the inability to integrate the smaller acquisition into the large organisation is that management considers that even if it is successfully managed it can make little impact on group profit, and hence motivation is of a low order – but it should be remembered that *failure* to achieve success can lead to disproportionately large downside in profit terms.

Pre-acquisition analysis

Besides embarking on a policy of acquisition without making their own objectives and takeover criteria explicit, many companies undertake mergers without even the most rudimentary analysis of the potential partner company’s business performance, products and markets.¹⁵ This criticism does not apply so much to financial analysis as to the product/market position of the takeover candidate. The acquiring company, in conjunction with its merchant bank, will usually have studied the trend of financial indicators – for example, overall profits, profit margins, capital employed, ratios of debtors and creditors to sales, stocks to sales, net asset values, property revaluations, surplus cash and other assets, capital commitments, details of gearing together with debenture trust deed stipulations, earnings per share trends, share price performance, shareholding spread, including directors’ holdings, and any other indicators, available from the Chairman’s Statement in the Annual Report and Accounts, as to future plans, loss-making activities, reorganisations, etc. – in coming to a realistic bid price.

However, equally important from the standpoint of managing the company following acquisition is the product/market analysis. This type of analysis is aimed at focusing upon the business factors necessary for success in each of the operations carried on by the takeover candidate.

Most companies are engaged in a variety of businesses. Either they have a diversified product line, or they sell to a wide range of customer groups, or they use distinct distribution channels. Consequently, it is important to analyse the company by looking at the various separate ‘businesses’ that make up the whole.

The product/market analysis will therefore, in addition to providing financial data, highlight for each separate ‘business’:

- the main determinants of market demand for each business’s product(s)
- the chief competitors, their market shares, and trends of performance over time
- any recent moves or innovations by competitors that might be likely to affect future demand for the takeover candidate’s product
- whether demand is cyclical
- how the industry (in which the business operates) has performed relative to the economy
- how the business has performed against the industry
- the tactics necessary for competitive success, e.g. price competition, heavy advertising, product innovation, etc.
- the rate of additional commitment of resources to the business,

together with any other relevant areas in assessing market demand for the takeover candidate’s range of products. This phase of the analysis should locate for each ‘business’ the key variables which underpin profitability. In most businesses a small number of factors exert a relatively large influence on profits; it is essential to identify these if they are to be controlled after the merger.

Equally important in the pre-acquisition appraisal is an in-depth analysis of the production function. Here the concern will be with the production processes, skills, and machinery necessary for the products in the target company’s mix of businesses. The analysis will consider the availability of raw materials, their source of supply (and fluctuations thereof), and in particular, whether raw material supply will be affected by a merger or acquisition.

Finally the pre-acquisition analysis should focus upon management requirements for running the acquired business, together with an appraisal of the talent available inside the target company, and that which may be delegated from the acquiring company to the new subsidiary. This is discussed in more

detail under the heading 'Assessment of management requirements'.

There should also be a comprehensive study of the key personnel within the takeover candidate company, in order to build a picture of the company's leading managers, covering their areas of specialism, individual skills and business style, and their motivation.

The overall pre-acquisition analysis is facilitated where the takeover candidate allows access (however limited) to factories, accounts and the management team. Indeed, where the initial acquisition approach has come from the takeover candidate, or where the takeover is in the form of an agreed bid, then full access should be insisted upon. Not to allow such access in these circumstances can only be taken as a sign of 'something to hide'. Whilst undertaken as an accounting investigation, this analysis provides an opportunity to examine all the facets of the business as set out above.

However, where there is hostility to the acquisition proposal, it is unlikely that access will be allowed. All sources of data including published government statistics, company accounts, special studies by market research organisations – such as the EIU – trade association figures, personal contacts in the industry (with discretion) should then be tapped. Although frequently overlooked, the line managers of the company making the bid – although the approach should obviously not indicate the reason behind it – can give a good assessment of rivals' strengths and weaknesses.

At this stage the question should be asked – to what extent are the results achieved by the takeover candidate a function of the entrepreneurial abilities of one or two of the proprietors or directors? Frequently, these entrepreneurial situations involve specialist skills in the areas of salesmanship and innovation. It is important to recognise where profit stems from this source, because continued profit performance depends on the continued motivation of the entrepreneur(s). The company making the acquisition, ought in these circumstances, to make the purchase consideration contingent upon achievement of specified profit levels over a period of time.¹⁶

A further area of detailed pre-acquisition study is a professional survey and valuation of the target company's properties. Again, access facilitates this procedure.

The outline pre-acquisition analysis will need updating as further information becomes available during negotiation. The total analysis should culminate in a projection of profits, cash flows and resources over the forthcoming years for the takeover candidate company, first on the assumption that it will not be taken over.

The company making the acquisition will then project its own profits and cash flows, first on the basis of *no acquisition* – these estimates should be available in the corporate plan – and second assuming that it takes over the target company. These aspects of the work are looked at later in this paper. This, 'with takeover' forecast, should take into account gains from unlocking the potential in assets uneconomically employed, for example, by selling off surplus properties or closing down loss-makers, cutting down on overlapping R and D, duplicated administration, computers and services, etc.

In assessing potential economies of scale or sources of release of synergy, research¹⁷ indicates significant difference between theory and practice. It is generally considered that production is the most likely source of achieving synergy gains through longer manufacturing runs, increased raw materials purchasing leverage, the justification of more efficient plant and machinery, and the opportunity to rationalise manufacturing facilities. The second most profitable area is often reckoned to be research and development through the elimination of duplicated effort. Similarly, there is potential for more efficient marketing effort where product line, distribution channels and sales forces can be combined. Organisational gains are ranked fourth; these involve economies of scale that eliminate duplicated functions and release 'human creativity through improved motivation'. Finally, financial economies of scale, where new money is raised on uncharged assets, or where asset backing for borrowing is increased, are generally ranked below other functional pay-offs.

However in practice – and this is relevant in projecting and planning for results following merger – these theoretical rankings are reversed. Synergy is most easily released in financial areas. Next comes the marketing function. Production and research and development gains, usually thought to be the most easily won sources of synergy, in practice turn out to be the hardest to release.

For the acquisition-minded company, these findings suggest that there should be a certain amount of scepticism in respect of manufacturing and technological economies of scale. Such potential gains come as a reward for management effort: synergy is not inherent in a situation – it is the prize, not the entitlement.

Assessment of management requirements

Improving the return on a new subsidiary's assets is the major task of acquisition policy. This is achieved neither by continuing to do exactly what was done before, nor without the holding company becoming

deeply involved in the business of the subsidiary. Direct management demands of acquisitions should not be underestimated – that they are is frequently the key reason for a failed merger.

Kitching's study suggests that 'the sum of the management skills must be greater than the joint management task' takes on the role of a law in mergers – hence the need to draw up a detailed schedule of management demand and supply.

In some cases it may be possible for the acquiring company, before the acquisition, to study the takeover candidate's managers, and their responsibilities and capabilities, at first hand. In other cases such an analysis will have to be built up from the outside; in these circumstances there will clearly be question marks against it. However, when so much is at risk, an attempted appraisal, albeit 'through a glass darkly', is very much better than nothing at all. The best estimate of management strengths and weaknesses should always be made, and should lead to the acquiring company deciding how it plans to fill areas where there appears to be a shortage of talent.

Where the first approach comes from the vendor, the buying party is strongly placed; it is possible to insist upon a full investigation. This will provide an ideal opportunity to carry out a form of management audit as well as a financial audit.

Costs (if any) resulting from management rationalisation, e.g. early pensions, redundancies or severance payments, should be set out at this stage.

Outline integration plan

One characteristic of a successful merger is a plan, outlined before purchase, setting out the detailed 'nuts and bolts' mechanism of the merger. Although the plan may be amended subsequent to takeover, it forms an initial blueprint for action.

It should first specify what is hoped to be gained from the acquisition. David Hargreaves¹⁸ suggests that it should specify whether the gains lie in:

- 'buying products or markets
- eliminating competition
- safeguarding a source of supply
- safeguarding the market of your existing or future products
- buying management
- buying technology
- buying as a defensive strategy to stop your competitor increasing his strength
- buying into a different market or technology as a specific and well-thought-out policy of diversification.'

The integration plan should then move on to detail how these gains are to be achieved. Here, positive results can best be won from a merger by active

integration by committed management. Nothing fails like the merger of two equal partners, and the probability of failure is compounded where the intention is that the business should continue to trade as if no merger had taken place.

As a general rule, immediately following acquisition is the ripe time to effect change. Most merger experts agree that the longer the problem of change is put off, the harder it becomes.

Kitching's¹⁹ experience in the USA indicates that:

'the nature of the reporting relationships set up between parent and acquired companies, along with the organisational responsibilities and control systems established, is a dominant influence on the success or failure of the merger.'

The integration plan should specify the executive from the parent company who is to be assigned, immediately after acquisition, to the new subsidiary. Kitching believes that the appointment of the executive who 'rides herd' is a pre-requisite of success. The plan should also specify other changes lower down the potential subsidiary company's executive structure, for example who from the parent company (or from the subsidiary) is to fill vacant or new positions together with their duties and terms of reference. The plan should also make explicit lines of command and reporting relationships and procedures in the subsidiary, and it should focus upon the management information and reporting system required immediately following takeover.

Where profitable rationalisation potential appears achievable, the plan ought to set out why it is thought that it exists and how it is to be liberated.

However, the ultimate release of the profit potential in a merger situation must depend on the existence of adequate management talent and its motivation. Often given a changed management environment, previously conservative or frustrated executives may be motivated towards profitable use of resources, encouraged to make suggestions for improved business results, and so become thrusters rather than sleepers.

Before leaving the integration plan, it is useful to re-iterate that, in the case of an acquisition of an entrepreneurial business where the key to profit is the ability (perhaps in marketing flair, innovation or design) of one or two executives, motivation ought to tie in with the financial consideration payable for the business. Thus it is wise in this situation to make the purchase price payable dependent upon the results of (say) five years future trading. The long-term objective following acquisition of an entrepreneurial business should be to change the operation into a more routine, profit formula type of situation – if this is successful it acts as an insurance against the entrepreneur losing his flair, or leaving the company.

Management involvement

Before acquisition is completed it is imperative to involve the personnel who are to be delegated from the parent company to the new acquisition in the problems of the merger, and to try to get a feel of their opinions and anxieties in regard to managing the new company in the group. By doing this, it is possible to assess how these executives will react in the new situation, and the involvement will help to allay their qualms.

Where there is a continuing programme of takeovers, it is advisable to appoint to the main board someone whose specific responsibility it is to make mergers work. This greatly enhances the chance of their success.

Acquisition financing

The most frequent methods of estimating the price that an acquiring company is prepared to pay in a takeover situation include some multiple of prospective earnings, asset value, or a combination of the two – perhaps assets plus prospective earnings multiplied by some P/E ratio. For an indication of the mechanics of such computations see reference.³⁰

I will now outline how discounted cash flow may be used to evaluate a takeover target company. The literature of financial management and capital project analysis regards other companies as investment opportunities open to the firm and capable of being analysed in the same way as any other capital project.²¹ But according to G. D. Newbould's detailed survey²² of the acquisition methods of 38 companies making takeover bids in the UK in 1967 and 1968, not one used discounted cash flow as an aid to arriving at the bid price. This survey further indicated, on average, that if the price paid by the bidding company is to be justified, an average increase in the earnings of the acquired firm of between 10 and 15 per cent compound (given a five year view) is necessary. This very demanding requirement, given insufficient fundamental analysis, is hardly surprising.

The financial analysis which leads to the determination of the purchase price of the firm requires five broad categories of financial projection:

- (i) an estimate of likely future net of tax cash flows (mainly profits plus depreciation) available to the equity shareholders
- (ii) a valuation of all surplus assets: assets not required in running the main business activities of the takeover target company.
- (iii) a valuation, on a break-up basis, of the operating assets.
- (iv) estimates of the cost and timing of replacement, in respect of all non-surplus assets.
- (v) the amount and timing of any loan redemptions.

In the estimating of future cash flows under (i) above, the analyst should be concerned with *incremental* flows – this includes, besides cash flows that may accrue to the company being taken over, higher profit that may be earned in the area of the acquiring company's existing operations as a result of economies arising from the acquisition. Also to the extent that any additional capital investment (not covered under (iv) above) is required to achieve the estimated level of cash inflows, clearly the net of taxes and capital allowances effect of this should be taken into forecast cash flows.

Assuming that the acquired firm will continue to be operated into the foreseeable future, and that surplus assets are realised, it is possible by taking (i), (ii), (iv) and (v) together to determine the cash flows resulting from the acquisition. Using discounted cash flow technique, the present value of the target company may then be obtained.

Merrett and Sykes²³ state that for this purpose:

'it is generally most desirable that the analysis be conducted in terms of the equity net cash flows discounted at the purchasers equity cost of capital and for subsequent analysis to take into account any special financing advantages or disadvantages of the new acquisition.'^{*}

The acquired company may have only a limited economic life. Comparison of the present value of items (i) and (v) with the present value of item (iv) will indicate whether this is so. Clearly, if the present value of the costs of replacement exceeds that of net income, the business is of limited economic viability. This does not mean that it is not worth buying, but that it should be treated as an investment with a limited life. If so, the present value of the target company should be calculated by aggregating the discounted estimates of (i) – over the economic life of the business – (ii) and (v).

Equally, the business is one without an economic life if the break-up value – (iii) above – exceeds the net present value of future cash flows. This type of investment – the asset situation – is attractive only where the purchase price is less than the asset value, and the assets can readily be sold off.

Estimating future cash flows

The pre-acquisition analysis will have highlighted the

* Thus the preferred rate of discount should be the cost of equity capital related to estimated net equity cash flows. This is estimated, on average – see the section of this paper entitled 'The Costs of Debt and Equity in Financing Investment Decisions' – as around 12 to 13 per cent. If, subsequently, a lesser rate is used, as it may be to allow for the issue of non-equity instruments and cash in financing the acquisition, it should not be below the weighted average cost of capital used to finance the acquisition – see 'Financing the Acquisition' later in this paper.

key elements determining profit for each of the business operations carried on by the takeover candidate. Thus a rigorous and detailed analysis of past financial performances should be undertaken as a starting point – although such past performance should not be over-weighted in terms of estimating future outturns. How past financial results have compared with the framework implied by the product/market analysis should be carefully checked, and where the company's business performance has deviated from that of the industry, the reasons for this should be fully investigated.

The next logical step is to forecast incremental future trading profits. This involves appraising all possible ways that the firm might be developed and choosing that which maximises the present value of the future net incremental cash flows. Economies based on rationalisation of manufacturing, purchasing, distribution, marketing facilities and general overheads, etc. should all be evaluated. From the incremental income so derived should be deducted corporate taxation and the discounted value of any capital investment necessary to maintain and expand the business. In estimating rationalisation and synergy gains, it is wise to take a somewhat pragmatic and sceptical view, bearing in mind the guidelines regarding synergy release previously referred to.

In assessing incremental cash flows resulting from an acquisition any losses which are averted as a result of the takeover should be taken into consideration. Thus if firm A does not buy out firm B, and this gives C an opportunity to merge with B instead, A might suffer a loss of business.

Asset evaluation

The valuation of assets at the time of an acquisition is important to both purchaser and seller.

The first objective is to identify and value those assets required to carry on the business, and those that are surplus. The purchaser is interested mainly in the value of those assets that are to be retained, on a replacement cost basis. But he should require details first, of their resale value, and second their estimated remaining life and cost of subsequent replacement. This analysis is often approached by setting out total figures for various classes of assets, e.g. plant and machinery, vehicles, etc. and only looking at single assets where their cost is large in relation to the total business.

The valuation should provide an estimate of the resale value of surplus assets. If it is likely that the surplus assets will appreciate, an indication of likely movements in value should be obtained. If the rate of appreciation exceeds the purchaser's cost of capital, the assets may be worth holding for resale at some

later time.

This valuation process requires specialist attention, and the expert opinion of engineers, property valuers and surveyors should always be sought. Indeed, many companies who regard acquisitions as an integral source of growth employ staff property experts.

The above valuation procedure should be backed, if possible, by an evaluation of net current assets.

Having carried out the above routine investigation, the purchaser will be armed with schedules of:

- existing assets necessary to carry on the business at replacement cost and resale (or break-up) value;
- an estimate of the economic life of the assets necessary to carry on business together with necessary replacement outlays at the end of that life,
- surplus assets at resale value.

The minimum value of the business to the vendor should be the sum of all assets at break-up value. If the purchaser can buy the business for less than this, clearly he can reap immediate short-term gains merely by liquidating all assets.

Taxation

Taken in conjunction with loan redemptions, details of which are readily available since such information is required to be registered at Companies' House, the purchaser will have data on all five key points set out above. Before these estimates are converted into net cash flows, the impact of taxation needs to be examined. The effect of the change of ownership should be investigated, whether the company to be acquired has any tax losses, or any substantial capital allowances to be carried forward – these are all important points. Past rates of taxation should be studied in relation to profits with special reference to overseas businesses. This part of the evaluation will result in the purchaser having such an insight into the takeover candidate company's tax position that he is able to estimate future tax bills in the light of his profit forecasts.

Estimates of likely future net of tax incremental cash flows – suitably adjusted where necessary for replacement of worn out assets – taken with realisations of surplus assets and loan redemptions will provide information, which when discounted at the cost of capital* will provide a reasoned valuation of

* So far during this article, the cost of capital has not been discussed in any detail. This topic is a complex one. Whilst it is commented on briefly towards the end of this paper under the heading 'The Costs of Debt and Equity in Financing Investment Decisions', interested readers are referred to A. J. Merrett and Allen Sykes, 'The Finance and Analysis of Capital Projects', Longmans, 1963; J. Fred Weston and Eugene F. Brigham, 'Managerial Finance', Holt, Rinehart and Winston, 1970, or Harold Bierman, Jr, and Seymour Smidt, 'The Capital Budgeting Decision', Macmillan, 1956, where comparatively straightforward ex-

the business to be acquired.

This price, should be the maximum price that the purchaser is prepared to pay. The minimum price, in the case of a company with a stock market quotation will generally be set by the stock exchange share price.* In fixing the bid price, the purchasing company will have in mind the value based on the stock market price, the break-up value and the discounted net present value.

A certain amount of haggling takes place between vendor and purchaser before an acceptable price is reached; the machinations that precede the arrival at the final price are well documented in the financial press and the objective accounts of this aspect of acquisitions.²⁴ An interesting analysis of how the haggling process develops and leads to an acceptable bid price is set out in reference.²⁵

The use of debt and equity in financing the acquisition

Throughout this paper the view has been taken that, in making any acquisition, the company will be moving towards the achievement of maximum long-term growth in earnings per share.

Earnings per share growth may result from improved trading performance, but it can also spring from an acquisition, whether through changed accounting (e.g. depreciation) practices, or the method of financing the acquisition. It is important to appreciate the gains – and pitfalls – of various financing arrangements.

The implications of different financing policies are illustrated by means of the numerical example summarised in Tables 2 and 3. Table 2 shows relevant financial statistics for three companies with total capital of £10m financed from different sources. Because of the various methods of financing, both the amount available for the ordinary shareholders and the companies' earnings per share differ.

Table 3 shows the effect on profit available for equity shareholders and earnings per share, assuming that the net profit of each company (at the pre-interest, pre-tax level) increases by 20 per cent.

positions of the subject are set forth. The rate of discount used in this type of analysis should in no circumstances be less than the weighted average cost of capital used to finance the acquisition. But generally it is preferable to begin with the equity cost of capital based on an opportunity cost approach – that is, 12 to 13 per cent for most companies (see 'The Cost of Debt and Equity in Financing Investment Decisions' later in this paper) – and take financing advantages, which lower the overall cost of capital, into account subsequently.

* However, there are exceptions; for example, the successful bid by Lines Brothers Ltd for Meccano Ltd, and the unsuccessful bid for Rachelle (Soft Drinks) Ltd, producing cyclamate-based drinks, who received an offer of 28 6d per share when the stock market price stood at 8s 4½d per share.

It can be seen from the tables that earnings per share growth is greatest in the case of the highly geared Company C. However, had the net profit before interest and tax fallen, the decline in earnings per share would have been most pronounced in the case of the highly geared company.

Because of this, the stock market has developed certain rules of thumb as to the maximum acceptable level of debt in corporate financing – for manufacturing industrial companies, this is frequently reckoned to be around 35 per cent of capital employed; for property companies, it is higher because of the security offered by property backing, and is said to be around 65 to 70 per cent of capital employed.

Given these approximate upper limits for debt capacity, the financing policy that utilises debt in such a way as to increase earnings per share – and hence the total value of the corporation* – at the most efficient rate consistent with acceptable risk, should be chosen.

Equally important in acquisition financing, but through the use of equity as opposed to debt, is the question of the relative P/E multiples of the bidding and the victim companies.

If a take over is financed solely by equity shares (to leave aside, for convenience of illustration, the complexities of debt financing) the P/E ratio of the acquiring company following takeover of a subsidiary should, in theory (with no immediate operating economies or benefits) be the average of the P/E ratios of the two companies weighted by the respective levels of earnings.

In Table 4 it is assumed that company P is to take over company Q, the acquisition being financed by the issue of 5.33m ordinary 25p shares underwritten

* There is a learned controversy as to the ability of debt financing to vary the total value of the company. The proponents of the 'traditional theory' of financial management – a detailed account of which is admirably set out in Ezra Solomon, 'The Theory of Financial Management', Columbia University Press, 1963 – suggest that the judicious use of debt will enhance the total stock market value of a company. By contrast the original empirical studies of Modigliani and Miller (see 'The Cost of Capital, Corporate Finance and the Theory of Investment', *American Economic Review*, XLVIII, No. 3, 1958) indicated that the total value of the corporation is independent of capital structure. However, in a subsequent paper – following a reply by David Durand (see 'The Cost of Capital in an Imperfect Market: A Reply to Modigliani and Miller', *American Economic Review*, June 1959) – Modigliani and Miller modified their opinion to the effect that where interest is deductible for taxation purposes, the total value of the company may be enhanced by the use of debt – but only by virtue of the taxation treatment of debt interest (see F. Modigliani and M. H. Miller, 'Corporate Cost of Capital: A Correction', *American Economic Review*, July 1963).

Thus it appears that whether the traditional theory or the Modigliani and Miller hypothesis is accepted, either implies some increase in the total value of the company through the judicious use of debt.

TABLE 2
Earnings per Share in Base Year

	Company A £m	Company B £m	Company C £m
Ordinary shares of £1 each	3.50	3.50	3.50
Reserves	6.50	3.00	—
Debentures (10%)	—	3.50	6.50
	10.00	10.00	10.00
Gearing (debt to total capital)	0%	35%	65%
Net profit before interest and tax	1.50	1.50	1.50
Interest on debentures	—	0.35	0.85
	1.50	1.15	0.85
Taxation (40%)	0.60	0.46	0.34
Net profit available for ordinary shareholders	0.90	0.69	0.51
Earnings per share	25.7p	19.7p	14.6p

TABLE 3
Earnings per Share in Subsequent Year

	Company A £m	Company B £m	Company C £m
Net profit before interest and tax	1.80	1.80	1.80
Interest on debenture	—	0.35	0.85
	1.80	1.45	1.15
Taxation (40%)	0.72	0.58	0.46
Net profit available for ordinary shareholders	1.08	0.87	0.69
Earnings per share	30.9p	24.9p	19.7p
Earnings per share growth	20.0%	26.1%	35.3%

at £2.25 each. It is reasonable to assume that the stock market will reduce the earnings multiple attributed to the new group, because, before the takeover, the expected earnings growth of company P was 12½ per cent p.a. compound (see Table 4) and the growth rate, post-acquisition, is only 7½ per cent p.a. compound. The post-acquisition position is set out in Table 5.

In theory, the value of the new enlarged corporation should remain, following the takeover, the same as the sum of the value of company P and company Q. This would place a value of £30m on the new

group, and imply a P/E ratio of 15. The theoretical effect of the acquisition will be to increase the earnings per share of P Ltd from 12.5p to 15p per share, and the P/E multiple, reflected in the share price, steady at 225p will reflect the group's decreased earnings growth potential, and will fall from 18 times to 15 times.

However, it appears from empirical investigations, that the actual post-acquisition P/E tends to be higher than the theoretical one in acquisitions where there is an immediate boost to earnings per share (i.e. the type above). Thus the post-acquisition P/E of com-

TABLE 4
Relevant Statistics for Companies P and Q before Acquisition

	Company P	Company Q
Share capital in 25p shares	£2m.	£2m.
Earnings for ordinary shareholders	£1m.	£1m.
Earnings per share	12.5p	12.5p
Price/earnings ratio	18	12
Share price	225p	150p
Expected rate of growth in earnings per share (say)	12½%	2½%
Value of equity capital	£18m.	£12m.

TABLE 5
Position following Acquisition by P Ltd of Q Ltd.

	Company P Ltd. and subsidiary Q Ltd.
Share capital in 25p shares	£3.33m.
Earnings for ordinary shareholders	£2m.
Earnings per share	15p
Expected rate of growth in earnings per share	7½%
Value of new group	£30m.
Price/earnings ratio	15
Share price	225p

pany P would probably exceed 15.

Where an immediate dilution in earnings per share occurs, the evidence indicates a similar tendency for the actual multiple accorded by the market following acquisition to be below the theoretical one. This situation, which would have occurred had it been company Q taking over company P in the example above, is set out in Table 6. In this case the theoretical P/E of 15 would be greater than that occurring in practice.

TABLE 6
Position assuming Acquisition by Q Ltd.
of P Ltd.

	<i>Company Q Ltd. and subsidiary P Ltd.</i>
Share capital in 25p shares	£5m.
Earnings for ordinary shareholders	£2m.
Earnings per share	10p
Expected rate of growth in earnings per share	7½%
Value of new group	£30m.
Price/earnings ratio	15
Share price	150p

It appears that, whether financed by debt or ordinary share capital, or a mixture of the two, the strategy should be to increase earnings per share within normal levels of acceptable risk.

But there may be a conflict between short-term earnings per share performance, and long-term earnings per share prospects. Where there is a short-term boost to earnings per share (e.g. an acquisition of the type above where company P takes over company Q) but a longer-term dilution, this dilution must be borne in mind, and if possible quantified, in assessing the relevant merits of the acquisition. In the case of company P's takeover of company Q in the example above, the effect of the acquisition on projected earnings per share can be seen in Table 7 below, which assumes that without the acquisition, earnings per share will begin at 12.5p per share and grow at 12½ per cent per annum

TABLE 7
Projected Earnings per Share of Company P Ltd.
With and without Acquisition of Company Q Ltd.

Year	<i>Projected earnings per share of company P (without acquisition)</i>	<i>Projected earnings per share of company P (with acquisition of Q)</i>	<i>Effect of acquisition on earnings per share of P Ltd.</i>
0	12.50p	15.00p	+2.50p
1	14.06p	16.12p	+2.06p
2	15.82p	17.33p	+1.51p
3	17.80p	18.63p	+0.83p
4	20.02p	20.03p	+0.01p
5	22.52p	21.53p	-0.99p

compound. With the acquisition, the base year earnings per share will be 15p per share with growth thereafter at 7½ per cent per annum.

As an alternative to the acquisition of company Q, assume that company P can take over company R, again by the issue of equity shares, and that the effect of such an acquisition is to dilute earnings per share in year 0 from 12.50p per share to 10.83p per share, but to enhance growth prospects from 12½ per cent to 25 per cent. The earnings per share projections, in these circumstances, are shown in Table 8 where it can be seen that, in contrast to Table 7, short-term dilution is followed by longer-term growth in earnings.

TABLE 8
Projected earnings per Share of Company P Ltd.
with and without Acquisition of Company R Ltd.

Year	<i>Projected earnings per share of company P (without acquisition)</i>	<i>Projected earnings per share of company P (with acquisition of R)</i>	<i>Effect of acquisition on earnings per share of P Ltd.</i>
0	12.50p	10.83p	-1.67p
1	14.06p	13.54p	-0.52p
2	15.82p	16.93p	+1.11p
3	17.80p	21.16p	+3.36p
4	20.02p	26.45p	+6.43p
5	22.52p	33.06p	+10.54p

The assessment of the relative merits of the two acquisitions set out in Tables 7 and 8 must take into account the longer-term as well as the short-term impact on earnings per share.

The conflict can be summarised simply. The former type of acquisition would, according to the empirical studies referred to above, be more acceptable from a City standpoint, inasmuch as earnings per share received an immediate gain and this would probably be accompanied by an enhanced share price.

By contrast, the takeover by company P of company R has caused short-term dilution in earnings per share which might be reflected by a depressed share price, although in the longer-term, growth prospects are greater.

To assess the true merits of each case it is necessary first to set a time limit over which the assessment is to be made – in the figures set out in Table 9 this has been taken as five years – and second to take account of the time value of money, as has been done in Table 9, using a discount rate of 10 per cent net of tax.

The acquisition of R Ltd by P Ltd is to be preferred on these criteria to that of Q. (See Table 9.)

In concluding this section it should be clear that in financing acquisitions, as in managing the corporate structure, the policy should be to use debt capacity

TABLE 9

Incremental Earnings per Share Gains Resulting from Acquisition by P Ltd of Q Ltd and R Ltd Discounted to Present Value

Year	Discount factor at 10%	Impact on earnings per share (new pence)			
		P Ltd. takes over Q Ltd. see Table 6	Discounted	P Ltd. takes over R Ltd. see Table 7	Discounted
0	1.000	+ 2.50	+ 2.50	- 1.67	- 1.67
1	0.909	+ 2.06	+ 1.87	- 0.52	- 0.47
2	0.826	+ 1.51	+ 1.25	+ 1.11	+ 0.92
3	0.751	+ 0.83	+ 0.62	+ 3.36	+ 2.52
4	0.683	+ 0.01	+ 0.01	+ 6.43	+ 4.39
5	0.621	- 0.99	- 0.61	+10.54	+ 6.54
Net present value of gain in projected earnings per share			+ 5.64		+12.23

(within the limits imposed by the stock market and by trust deeds) so as to maximise earnings per share growth. Further, in assessing the contribution of an acquisition to earnings projections, such projections should be discounted to present value. However, if stock market credibility is to be maintained, the period selected in such projections should be comparatively short.

Obviously the acquisition that enhances the level of immediate earnings per share, and at the same time increases prospective growth in earnings, is to be preferred. But some conflict is generally encountered inasmuch as dilution either in the level of short-term earnings per share or in earnings per share growth occurs.

The costs of debt and equity in financing investment decisions

The whole of this sub-section takes into account the existing corporate tax structure. The amendments to company taxation foreshadowed in the Green Paper on corporation tax reform will, when implemented, change the figures somewhat. Indeed the gap between the cost of equity and fixed interest finance will narrow considerably; on the basis of the example in the Green Paper, *The Financial Times*²⁷ observed:

'The new company tax reform proposals suggest that to put £100 net into the pockets of its financiers, the company will need to make only £200 pre-tax as against £238 now for shareholders and £143 for lenders.'

However, since it is not yet clear whether the Government will wish to base future company taxation on the German 'two rate' type system or the French method of a tax credit for shareholders, or what the future rate will be, there is little that one can say about future required rates of return. When the choice is made, the argument in this part of the paper will need revision; meanwhile the presentation is with the background of the present corporation tax.

Generally speaking, debt is the cheapest form of

raising new funds. The net of corporation tax cost of 10½ per cent debenture is:

$$10\frac{1}{2}(1-0.40) = 6.3$$

because debenture interest is an allowable expense in calculating corporation tax payable. By contrast the dividend payable on preferred capital is viewed, for tax purposes, as an appropriation of profit, not a charge against profit. Thus the net of corporation tax cost of capital raised via 10½ per cent preference shares is 10½ per cent. For this reason, the choice of preference shares as a means of providing corporate finance has declined dramatically.

Assessing the cost of equity capital is somewhat more complex; various formulae have been suggested, but none is generally agreed. Some approaches are:

- the earnings yield basis, i.e. the current earnings per share divided by the share price;
- the dividend yield plus an allowance for growth (either of future dividends, or future share price);
- the opportunity cost approach;
- the earnings yield plus an allowance for growth.*

My own preference is for two of the above methods. The first is the 'dividend yield plus growth' formula.

* This approach, used by G. P. E. Clarkson and Bryan J. Elliott (see 'Managing Capital Funds', *National Westminster Bank Quarterly Review*, August 1970), recognises that, in issuing new equity, the company should attempt to avoid both short-term earnings dilution and long-term dilution in earnings per share growth. Their cost of equity capital (calculated by earnings yield plus growth in earnings per share) is the rate that should be attached to new equity capital in order to avoid both types of dilution. The Clarkson and Elliott approach used the following argument. Additional new equity may be raised by a company either by way of a rights issue or a takeover bid. Equity raised in such ways poses an immediate threat of dilution to earnings per share on the shareholders' capital before the issue. It has been shown in the numerical examples above that this dilution may be on the existing level of earnings per share or on its growth rate. If dilution is to be avoided, the return on new equity money must exceed the sum of the existing earnings level plus the earnings growth expectations of equity shareholders. In other words the net of corporation tax cost of equity capital is given by earnings yield plus earnings growth.

This seems appropriate because investment financed by equity capital ought to earn at least the rate of return that investors expect to receive from such investment. The real return to the investor in a share is given by the sum of the dividend yield, its growth and the sum received when he sells out compared with initial cost. Assuming a constant growth in earnings, constant ratio of earnings to dividend, and a constant P/E ratio, it can be shown that the true return approximates:

dividend yield + growth in earnings.

Clearly, companies that have high expectations of growth will have a low earnings yield (and of course a high P/E ratio) and consequently a low dividend yield.

At the present time the average dividend yield is around $4\frac{1}{2}$ per cent to $4\frac{1}{4}$ per cent. Research²⁸ indicates that the average growth in equity earnings between 1955 and 1965 amounted to just under 5 per cent and between 1960 and 1965 the average annual increase was under $4\frac{1}{2}$ per cent. Using these figures, the cost of equity capital for the average company would amount to somewhere between $8\frac{1}{2}$ and 9 per cent. Similar estimates have been obtained from other empirical studies.²⁹

The second method of estimating the cost of equity capital uses the opportunity cost concept. Here the argument is that the company, in raising new equity finance, should endeavour to give the shareholder a return comparable with that from alternative investment in a cross section of equity shares. Over long periods, the evidence³⁰ is that a balanced portfolio yields, on average, a return – in terms of net of tax dividends plus capital gains – of between 8 and 9 per cent. In order for a company to give its shareholders this sort of return, it must invest in projects that promise to yield a return (net of corporation tax) of around 12 to 13 per cent on a DCF basis.³¹

The conclusion from these two methods of calculating the cost of equity finance is that investment financed by equity should only be undertaken if it yields a return at least equal to the higher of the above two returns, namely 12 to 13 per cent net of corporation tax, based on the opportunity cost approach, or the sum of the company's dividend yield plus estimated earnings per share growth, which for the average company might amount to between $8\frac{1}{2}$ and 9 per cent net of corporation tax.

With this background, debt – costing around $6\frac{1}{2}$ per cent net of corporation tax – is clearly to be preferred to equity costing around 12 per cent, as an instrument for financing growth. Although if a bidding company's share price is temporarily overvalued, the incentive to issue equity is clearly greater pro rata.

However, it is frequently the case that in negotiating takeover terms the company being taken over

demands the right to participate in the future growth of the new group by having some stake in its equity. If ordinary share capital were issued immediately, dilution in earnings might occur. This may be overcome through the use of a loan stock with provisions for conversion into ordinary shares after a given time.³² For example, Table 10 shows in the first column the earnings per share effect on company X of financing its bid for company Y wholly by equity. The dilution occurring in the period immediately following acquisition is eliminated by the use of a loan stock convertible to equity after year 3.

TABLE 10
Effect of Convertible Loan Stock in a Situation where Earnings Dilution would Occur with Equity Financing

Year	Increase or Decrease in Bidding Company's earnings per share	
	if financed by equity	if financed by loan stock convertible to equity after year 3
0	-4p	+1p
1	-2p	+2p
2	—	+3p
3	+3p	+4p
4	+7p	+7p
5	+11.5p	+11.5p

The use of convertible loan stock finance gives the bidding company a breathing period to enhance earnings following an acquisition without being involved in short-term earnings dilution, although the effect of conversion in terms of arriving at a fully diluted earnings per share picture should be set out on the face of the accounts – see the Institute of Chartered Accountants exposure draft on earnings per share.

Similarly, the use of a loan stock with a warrant entitling the holder to subscribe for a specified number of shares at predetermined prices* over the life of the security achieves the same purpose.

The use of cash to finance acquisitions

Cash can be used in an acquisition package in two ways. By negotiating underwriting provisions for the bid, a cash alternative to other forms of instrument may be offered to the shareholders in the target company. Alternatively, cash may be offered direct

* An alternative argument is to look to the return available from alternative investment of cash in preference shares as providing the minimum acceptable return. To the corporate shareholder, the effective return (on a net of corporation tax basis) is at present around $9\frac{1}{2}$ per cent – the equivalent of about $16\frac{1}{2}$ per cent on a gross of tax basis – and there would seem to be no reason not to use this as the minimum required return from cash investment. This point is brought out by C. F. Pratten in his analysis of Slater Walker Securities' acquisition of Greengate and Irwell – see reference 33.

by the bidding company. In the latter case, the acquisition evaluation should ensure that cash invested directly earns a minimum return equal to that achievable through alternative forms of long-term investment. As previously mentioned, investment in a wide cross-section of equities has tended to yield between 8 and 9 per cent net of taxes. In order to justify investment of cash in any acquisition situation, this return should be the minimum cut-off period. Whilst the cash flow accruing to the investor on the convertible exceeds that of the ordinary shares converted (assuming the stock market prices of convertible and equity move in sympathy) there is no incentive to convert.

If cash is raised by a rights issue and then applied in financing an acquisition, the cost of equity capital (plus issue costs) is the relevant input into the calculation.

Financing the acquisition

The two key factors in the financing of takeover bids are, on the one hand, that earnings per share should be enhanced by the bid, and on the other that the anticipated incremental cash flows, discounted preferably at the equity cost of capital, but, at lowest, at the weighted average cost of finance used in the bid, should exceed the cost of such a bid.

With reference to the former criterion, anticipated earnings per share changes (taken over a comparatively short period of time because of the stock market's dislike of short-term earnings dilution) arising as a direct result of the acquisition should be discounted at a predetermined rate.

In calculating the weighted average cost of finance used in an investment decision, the following costs of finance should be taken:

	Net of corporation tax cost
debt finance costing say x% before tax	$x(1-0.40)\%$
preference shares costing say y% before tax	y%
equity finance	either, 12-13% or, dividend yield + anticipated growth rate in earnings per share (ex acquisition) (whichever is greater)
convertible loan stock - until conversion	net cost of debt as a minimum
after conversion	cost of equity
cash	minimum 8-9%

Immediately apparent from the use of the costs of capital set out above is the need to achieve fairly quick returns from acquisitions to justify the sub-

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stantial sums paid by companies in bid situations.* The bolstering of short-term incremental gains through cutting out losers, through seeking economies of scale, e.g. pooling buying resources, through realising surplus assets, and selling divisions with inadequate profit potential, and seeking sale and lease-back opportunities³³ is often the only way to make the necessary impact required to justify bid prices.

Post-acquisition integration

The period immediately following an acquisition should be seen as the key time in terms of laying the foundations for realising the potential of a takeover. It is then that a pattern of relationships is established that will continue into the future - thereafter such relationships are only changed by a major reorganisation. Indeed, it is a golden rule of the successful merger that group management should face the problems of its new subsidiary as early as possible. If gains are expected from integration or rationalisation, the sooner that the decision to integrate or rationalise is put into operation, the greater will be the present value of cash flow gains.

The post-acquisition appraisal

At the start of this paper it was recommended that before any takeover approach is made, the acquiring company should institute a detailed assessment of the financial and business capabilities and potential of the target company. This assessment will have been undertaken from the outside looking in, and access to all relevant facts may not have been available.

Before action is taken to reorganise the acquired company, it is essential to check all facets of the pre-acquisition appraisal. Indeed this should be the first duty of group management after gaining control of the takeover target company. A small team - which should include the key personnel who are expected to move to the new subsidiary - should be assigned to make a detailed assessment of management capabilities, business performance, and profit potential. This will act as a check on the analysis made at the pre-acquisition stage, and will culminate in recommendations for management reorganisation and rationalisation, and lead up to reformulation of the integration plan.

In some instances, it may be possible to undertake this part of the work leading to the final integration plan before a bid price is agreed. But 100 per cent

* G. D. Newbould, in his research study 'Management and Merger Activity', observed that none of the 38 bidding companies in his sample attempted to undertake acquisition analysis using the DCF criterion. This fact, coupled with the very high rates of growth necessary to justify the prices paid by the majority of companies in his sample, suggest a disturbing lack of fundamental pre-acquisition analysis in takeovers.

access before acquisition is the exception rather than the rule – though if the necessary detailed examination can be arranged before takeover, then the purchaser should do so.

In acquisitions where it is not possible to make a full 'face-to-face' analysis beforehand the appraisal procedure, which should include studies of business and profit potential and an audit of management personnel, should begin on day one of the post-acquisition period. The management audit should involve a series of interviews designed both to establish a picture of managers' personal strengths and weaknesses and also to enable group management to see how the organisation works in terms of responsibilities, authorities and relationships. During the course of these interviews, group management will be looking not just for executive competence; it must always be borne in mind that the ability to get into the anticipated organisation structure is of utmost importance. It is also important to find out whether key management personnel will be willing to serve in the new environment.

At the same time, the profit and business performance audit will be concerned first with specifying the range of 'businesses' (see under the heading of pre-acquisition analysis) that the company is engaged in. This analysis will identify for each 'business', the key variables necessary for success. Whilst verifying past profit performance and projecting (in outline) future out-turns, rationalisation possibilities will also be focused upon. With this in mind, a property expert should be assigned to report on values of all properties owned or occupied by the new subsidiary with particular reference to redevelopment or sale and lease-back possibilities.

All this information will be brought together to make plans for future action. Short-term rationalisation gains might accrue from selling off surplus assets, cutting out loss-making activities, transferring work from one factory to another, consolidating head office staffs, centralising duplicated functions and services – for example, purchasing and research and development.

The integration plan is the logical development from the post-acquisition appraisal. It should begin by restating the objectives of the acquisition and it should show how these objectives are to be realised. It will highlight management reorganisation plans, the past and likely future performance of all the 'businesses' comprising the new subsidiary company, rationalisation plans, and the future corporate strategy recommended for the acquired company. This last aspect will take full cognisance of other group companies' future plans and will specify the detailed mechanism, including timing of integration – for

example, such aspects as the phasing out of the new subsidiary's existing product range and the launch of a joint range of products.

Attention was paid earlier to the pre-acquisition financial and business analysis of the acquired company; the post-acquisition appraisal will act as a check on key features in the pre-acquisition estimates, and will also specify future strategy for the business and for the absorption and motivation of management personnel.

Maintaining post-acquisition momentum

Integrating two corporate entities is invariably time consuming and intellectually taxing for management. It is therefore essential that there should be an adequate supply of 'managers of change' irrespective of whether these executives come from the holding company or the acquired company. This requirement is reflected in the statement of an executive of a highly successful acquisition-orientated American company.³⁴

'We appraised our position when we started on the acquisition trail and found that our major strength was in management, whereas we had a negative working capital position. So we used preferred stock to buy companies in trouble at distress prices. Then we put our superior management in and turned the situations around. The results were so successful that we are now able to borrow long-term and pay for our acquisitions in cash. Now we have a very positive working capital position – but no managers to spare. So we buy well-managed companies these days.'

The post-acquisition management audit, which is designed to highlight management supply and demand within the new subsidiary, will obviously provide guidelines in this area. It will enable a blueprint, which will be part of the integration plan, to be produced for the new organisation indicating where managers fit in and the existing gaps in the management structure. It will indicate details of the new organisation, make explicit the job descriptions of both new executives, including the new chief executive placed in the subsidiary by the holding company, and of those executives retained from the pre-acquisition period.

In terms of maintaining morale following a takeover and of being sure of the capabilities of management personnel in the acquired company, some authorities on mergers recommend that rationalisation of executive employees should not be done hastily. As an example of this opinion, Stanley Vance³⁵ states that:

'Successful merging depends very much on effec-

tive absorption of executives and managers into the parent firm. There rarely is a surplus of top technical talent in the taking-over firm. Consequently, at least during an interim period, it is usually expedient to follow a *status quo* policy in regard to management. The nature and duration of this interim period will vary depending on so many variable factors that no single formula will prove effective in all situations.'

But once it is firmly decided that managers are in excess of requirements, action should be taken. At this stage the foundation for future difficulties is often laid by creating sinecure positions for surplus staff, often those who were previously Board members. The managers concerned can cause discontent, and undermine morale. Rather than have their dissatisfaction festering in the organisation, they should be dismissed.

One of the most crucial factors in maintaining post-acquisition momentum and movement towards the achievement of acquisition objectives is the motivation of the management of the new subsidiary. Motivation can be achieved not only through increased financial rewards both in salary and stock option terms, but by various non-financial incentives, for example:

- achievement against company targets
- work recognition
- promotion prospects
- scope for wider responsibilities
- satisfaction in the work.

The immediate post-acquisition period is a time when changes are expected, and one of the most valuable – both from the standpoint of the holding company and from the standpoint of the employees of the new subsidiary – that can possibly be made is to create an environment in the newly purchased subsidiary with all the above motivators, and in which new ideas are encouraged.

Through the terms of the acquisition, it is possible that some of the main executives in the subsidiary company – executives previously holding a large stake in the equity of the purchased company – have become wealthy men; their motivation is essential to the results of the company because of their key role.

Parallel with the process of motivation is the need to obtain total commitment from all employees concerned. This is best achieved by allaying their anxieties and by educating and communicating to them the objectives and plans of the merger. At all levels of management, personal interviews with managers are the most effective means of communication, and at the higher levels this approach should always be followed. At the lower levels, dissemination of

information may have to take the form of letters and meetings. However, generally the greater the number of employees who can be seen personally on their own ground – i.e. in their own factory, shop or office – the better the communication process.

The resistance which employees show following an acquisition or merger is generally rooted in fear of the unknown, rather than fear of change. The process of education, then, must be designed to tell employees what is to happen, why and when it is to happen, and what will be the effect on themselves.

But this process of communication does not stop at employees; it should also cover all other parties likely to be affected, for example, trade unions (the impact of a merger on members is often communicated to the union before the employees), suppliers, customers, agents, local authorities, etc.

Control systems

The early installation of an effective control and reporting system to head office is another characteristic of the successful merger. What group management wishes to achieve through the control system is first to monitor the subsidiary company's performance and thereby prevent surprises, and second to enable it to make decisions affecting the companies in the group. The first objective is best achieved by the introduction of a budgetary control system together with detailed reports on variances. Internal reporting on such aspects as stock levels, receivables, etc., should be implemented by spot checks and internal audits either by the group management accounting or internal audit function. In reviewing subsidiary company reports, special attention will be paid to the key variables in the profits equation to ensure that these are under control. As regards the second objective, information for management decisions will flow partly from the routine reporting system, and the institution of one-off studies as and when required.

However, it must be stressed that the figures alone cannot control the operation. They must be backed up by direct person-to-person contact. Leighton and Tod³⁰ suggest that:

'Group management ought to visit each acquisition at least once a month and maintain frequent telephone contact. We have found it advantageous to go to them rather than to ask them to present their problems at the corporate offices; group management is then in a better position to monitor on-the-spot performance. In reviewing our records, in fact, we find that last year our team spent 42 per cent of its time visiting its group companies; and we do not see how we could have maintained effective rapport and control with any lesser expenditure of travelling time.'

Forward planning

The revised integration plan, prepared shortly after the acquisition, should contain a detailed long-term plan for the new subsidiary. This part of the integration plan will begin from the agreed corporate objectives and set out for each 'business' activity comprising the company the changes in corporate strategy that are necessary, together with their timing, to achieve the stated objectives. This phase of the integration plan represents the establishment of a long-term implementation programme, and when agreed it becomes a blueprint for future growth.

The implementation programme is effectively the future operating plan of the new subsidiary, and as such it should be updated annually and performance should be continuously monitored against plan.

Conclusion

The purpose of this article has been to set out a framework for the analysis, financing and integration

of potential takeover target companies. However, because of the very different profile and requirements of most acquiring companies, there are certain aspects of this framework which will vary from one company to another. For example, the views of the management of one company on the development of screening criteria for takeovers will almost certainly vary from that of others; similarly, the approach of one company to the acceptance of short-term dilution in earnings per share may vary from that of other companies. Hence there are in-company criteria that must be specified before a strategy of acquisition can be fully formulated. But with clearly defined takeover objectives as a foundation there are general rules for acquisition management. It is these rules that comprise the checklist in Table 11, which summarises this paper. Whilst the approach set out here does not cover every case, or guarantee success, it is thought that a programme of work based on the guidelines specified will reduce the risk of failure.

TABLE 11
Checklist for Acquisitions
Objectives

1. View the corporate plan as the cornerstone of acquisition strategy.
2. The plan should quantify (in terms of earnings per share) the corporate objective and specify the route towards its achievement in the shortest possible time at the least capital cost.
3. Remember that resources used in an acquisition may better be deployed in improving the profit of the existing business.
4. The corporate plan should specify acquisition objectives both in financial terms, and in terms of the type of business, its size, product and market that the company is interested in.
5. Generally the greatest chance of success occurs when the acquisition candidate is approximately the same size as the acquirer or the same size as the division with which it is to be integrated.
6. In setting acquisition objectives, build on existing strengths.
7. Avoid corporate aggrandisement.
8. Acquisition objectives should enable a company to select, as opposed to react to, takeover opportunities.

Pre-acquisition analysis

9. Keep a press cuttings file on all acquisition candidates.
10. Study candidates' past profit record with reference to operating ratios. Look in company reports for indications of future plans, loss-making activities, etc.
11. Most companies are in a variety of businesses. Analyse the candidates' performance in each of their separate businesses.
12. For each business try to assess the determination of demand, the nature of competition, innovations in the industry and the tactics necessary for success.
13. Assess key management personnel, especially their motivation, in the candidate company.
14. Assess whether the candidate's business is an entrepreneurial one; if so the purchase price to achievement of profit warranties.

15. Assess value of properties.

Integration plan

16. Specify and quantify the benefits of the acquisition, timing of rationalisation gains, closing down loss-makers, exploiting underutilised assets, etc.
17. Remember that synergy results from determined and competent management action, it is not automatically inherent in a takeover.
18. Remember that financial synergy is easiest to achieve; marketing, R and D and production follow in that order in terms of ease of synergy release.
19. Place emphasis upon the need for managers of change, whether they come from acquirer or acquired. Name the new chief executive of the candidate company.

Financing

20. Prepare projections of profits, cash flows and resources for:
 - (i) acquiring company - with no takeover.
 - (ii) candidate company - with no takeover.
 - (iii) acquiring company - with takeover.
 Under (iii), allow for gains as set out in the integration plan.
21. Assess the value of the takeover candidate by discounting future incremental cash flows achievable from the most economic exploitation of the candidate's resources.
22. Remember that the acquisition price should not exceed the discounted net present value of incremental cash flows, and that the effect should be to increase long-term earnings per share growth.
23. In financing the acquisition, try to minimise the weighted average cost of capital.

Post-acquisition integration

24. Act quickly, but not hastily.
25. Complete the appraisal of the company - but from the inside.
26. Redraft the provisional integration plan.
27. Put in new managers as necessary.
28. Motivate key managers to the hilt.

*Continued
overleaf*

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29. Instal control and reporting systems as necessary.
30. Act quickly in all areas except rationalisation of management personnel. Executive talent is generally in short supply, make sure that a full assessment of capabilities is possible. But once firmly agreed, it is

far better that managers in excess of requirements should be treated generously and humanely but dismissed rather than have their dissatisfaction festering in the organisation.

31. Develop a forward strategy and financial plan for the new subsidiary.

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Shareholder Behaviour in the New Issue Market – A Preliminary Report

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The theory of finance is firmly based upon the assumption that the dominant objective of a business is the maximisation of the wealth of its owners, which in the case of a company is regarded as tautologous to the maximisation of the value of its shares. James C. T. Mao, for example, in his excellent text 'Quantitative Analysis of Financial Decisions'¹ asserts

'In this book we shall postulate that the objective of financial management should be to maximise the market value of the shares of the existing common stockholders – or, more simply to maximise the net present worth of the company.'

Having made this assumption that the maximisation of the net present worth of the company will automatically lead to the maximisation of the market value of its shares, most writers then concentrate exclusively upon the procedures to be adopted by a company in the selection of its investment projects and financial structure. In effect it is assumed that the shares of a company are valued in a perfect stock market whose participants have identical attitudes and expectations to those of company decision-makers and where there is a perfect flow of information from companies to investors.

At the empirical level, too, researchers have concentrated upon the criteria used by businessmen in the selection of investment projects. Very little research has been directed towards such areas as the efficiency of stock market pricing and the behaviour and attitudes of different categories of investors. This deficiency is stressed by Gordon Donaldson² who states that most managements will wish to evaluate the consequences of their actions upon share value even if they are not concerned entirely with the maximisation of share value. He argues that there is consequently a need to relate theoretical share valuation

models to reality and points out that although much work has been done on stock market price patterns and to a lesser extent on the efficiency of stock markets, little has been done in the area of shareholder behaviour.

More recently Jon M. Joyce and Robert C. Vogel³ have argued the need for research in this area:

'Thus it seems that the composition of efficient portfolios is not uniquely determined but depends instead on the time period which has been selected for the measurement of risk. Viewed alternatively from the point of asset pricing under uncertainty, there is not an unambiguous measure of variance to use in discounting for risk either absolutely or relatively. Perhaps this finding should not be considered particularly striking but it still leaves unanswered the question: which variance? As will appear below, the answer is perhaps to be found through more careful examination of investor time horizons and the relations of *ex ante* to *ex post*.'

In an attempt to remedy this situation the authors are currently engaged in research financed by the SSRC into shareholder behaviour in the new issue market. The object of this research project is to analyse the behaviour of shareholders who subscribe for new issues of shares in the hope that this will enable general hypotheses to be formulated regarding shareholder behaviour. The new issue market was chosen for this purpose because it provides companies with large groups of shareholders all of whom were registered on the same date and whose subsequent behaviour can be meaningfully compared.

The scope of the project and the selection of the sample

The project is based on all equity issues made to the public during the years 1957–66 inclusive by com-

¹ Collier, MacMillan, 1969, p. 18.

² 'Strategy for Financial Mobility' (Division of Research, Graduate School of Business Administration, Harvard University, Boston, 1969), p. 34 *et seq.*

³ 'The Uncertainty in Risk: Is Variance Unambiguous?' *The Journal of Finance*, Vol. XXV, No. 1, March 1970, pp. 127–34.

panies which were obtaining a stock exchange quotation. The bulk of such issues were made either by the offer for sale method or by means of a placing, though tenders were used quite frequently between 1963 and 1966 and public issues were used during the period for several issues by investment trusts.⁴ During the period under survey there were on average about 100 issues per annum on English stock exchanges, and in the project it is intended to analyse seven issues from each year. The issues in each year were grouped according to the method of issue and then sub-divided according to size. The sample companies were then selected bearing in mind the need to obtain a reasonable spread of different methods of issue, large and small issues and relatively obscure and well-known companies.

The research into shareholder behaviour in the companies selected has been based upon an analysis of their share registers. Unfortunately it has not generally proved possible to identify transactions between the date of allotment and the date of registration when all letters of allotment are surrendered for share certificates. This has meant that 'staggering' transactions are excluded from the main study, though it is hoped to analyse these as a separate study based on those companies for which the issuing houses still have the information and are prepared to make it available. However, all transactions by shareholders after the date of first registration are available for analysis and the following information is being obtained for each company:

- (i) Dispersion of shareholdings at date of first registration
- (ii) Percentage of shareholders ceasing to be members during each year thereafter
- (iii) Analysis by size and value of holding of shareholders ceasing to be members
- (iv) Analysis by size and value of holding of shareholders who buy more shares
- (v) Analysis of different categories of shareholders by number of holders and by number of shares at date of first registration and at date of 1969 annual return.

A pilot study based on the years 1957 and 1966 has now been completed and the object of this paper is to explain the hypotheses regarding shareholder behaviour which are suggested by the data collected and to explain how it is hoped to test these hypotheses when the data for the entire project period has been collected. The following companies were included in this study and we should at this stage thank their registrars for their kind co-operation:

1957 (1) Bishop's Stores Limited (Placing)

(2) Clarkson (Engineers) Limited	(Placing)
(3) Clay (Richard) & Co Ltd	(Placing)
(4) Rotaprint Limited	(Placing)
(5) Tobénoil Limited	(Offer for Sale)
(6) Weston-Evans Holdings Ltd	(Offer for Sale)
1966 (7) Avimo Limited	(Placing)
(8) Bellair Cosmetics Limited	(Offer for Sale)
(9) Kraft Productions Limited	(Placing)
(10) Magnolia Manufacturing Co Ltd	(Offer for Sale)
(11) West Midland Steel Stockholders Limited	(Placing)
(12) York Trailer Company Limited	(Offer for Sale)

Hereafter the above companies will be designated in tables by the number in parentheses.

At this stage only six companies have been completed for 1957. The seventh had an excessively complicated capital structure and has been taken over by a company which refuses access to the share registers so that it has been necessary to start work on a substitute company. For the sake of balance a public issue by an investment trust during 1966, which has already been analysed, has been excluded from this report.

The pattern of cessation of Membership

The first Table below shows the percentage cumulative cessation of membership at the end of each year from the date of first registration by the shareholders at the date of first registration. Any shareholders whose shares were transferred as a result of death are excluded.

The table below enables several hypotheses to be suggested. An unweighted average of the 1957 companies shows that just over 40 per cent of shareholders were still members 12 years after the date of first registration. If this average was weighted by the number of original shareholders in each company (i.e. 170, 642, 292, 518, 2,217, 2,494, respectively) it would fall slightly to 39.5 per cent. It would thus appear that on average about 40 per cent of a company's original shareholders might be expected to follow a static investment policy, though the actual percentage might differ considerably from one company to another. Although it was not possible in view of the small number of companies analysed in the pilot study to carry out a rigorous analysis of the reasons for the different experience of the companies in this respect there appeared to be no relationship with the method of issue, number of shareholders, dispersion of shareholdings or the subsequent share price performance.

⁴ The mechanics of these methods are explained in 'The Stock Exchange and Investment Analysis', R. J. Briston (George Allen & Unwin, 1970).

TABLE 1

TABLE I		1957						1966					
		Company											
Sold within		1	2	3	4	5	6	7	8	9	10	11	12
1st year		10.6	28.0	5.8	21.8	7.0	8.1	14.8	27.0	7.4	20.0	11.5	32.0
2nd year		18.8	55.9	11.6	45.6	23.2	18.8	27.3	57.0	13.9	46.1	27.4	53.0
3rd year		36.5	63.6	17.1	51.5	32.3	32.8	41.6	63.6	20.8	57.0	39.8	63.3
4th year		43.5	67.0	19.2	57.9	37.2	41.7						
5th year		46.5	68.2	21.9	61.2	40.3	45.9						
6th year		48.2	69.8	24.2	65.8	45.7	47.8						
7th year		49.4	72.9	27.1	67.7	51.4	51.3						
8th year		51.2	74.9	28.3	69.9	53.0	54.3						
9th year		52.4	75.5	30.5	71.2	54.4	55.7						
10th year		52.9	76.5	33.6	73.2	56.2	56.4						
11th year		52.9	77.7	34.9	74.2	57.5	57.1						
12th year		54.1	78.0	36.0	—	57.5	58.6						
13th year		—	—	—	—	—	59.0						
Still holding		45.9	22.0	64.0	25.8	42.5	41.0	58.4	36.4	79.2	43.0	60.2	36.7
Average annual rate of reduction		6%	12%	4%	12%	7%	7%						

TABLE 2

	(a)	(b)	(c)	(d)	(e)	(f)
1957		£		%	%	%
Bishop's Stores	Placing	275,000	182	+1250	21.4	45.9
Clarkson Engineers	Placing	570,000	683	+1300	8.6	22.0
Clay (Richard)	Placing	369,070	324	+ 833	11.7	64.0
Rotaprint	Placing	593,325	544	+ 900	15.6	25.8
Tobenoil	Offer	187,500	2,451	+ 200	25.5	42.5
Weston-Evans	Offer	450,000	2,695	+ 270	7.8	41.0
1966						
Avimo	Placing	330,000	423	+ 300	6.6	58.4
Bellair Cosmetics	Offer	1,593,750	1,169	+ 7	6.7	36.4
Kraft	Placing	175,000	458	0	3.0	79.2
Magnolia	Offer	371,875	501	+ 150	7.8	43.0
West Midlands	Placing	225,000	434	+ 28	8.5	60.2
York Trailer	Offer	2,450,000	1,520	0	7.2	36.7

(a) Method of issue

(b) Total value of company based on issue price

(c) Total number of shareholders at date of first registration

(d) Change in share price between commencement of dealings and date of 1969 annual return

(e) Percentage of shareholders buying further shares

(f) Percentage of shareholders still holding at date of 1969 annual return

Table 2 suggests that the size of the offer is the most satisfactory explanatory variable. The two largest companies from the 1957 sample, Clarkson (Engineers) Ltd and Rotaprint Limited had considerably less shareholder stability while Clay (Richard) & Co Ltd and Bishop's Stores Limited, which were selected as examples of small placings evidenced above average stability. The small size of Tobenoil Limited was probably balanced by the use of the offer for sale method. A similar pattern is beginning to emerge from the 1966 companies, with the two largest stocks, Bellair Cosmetics Limited and York Trailer Company Limited showing far less stability than the two small

placings, Kraft Productions Limited and West Midlands Steel Stockholders Limited.

It seems possible that shareholder stability has decreased between 1958 and 1966, the unweighted average cessation for the two years being:

TABLE 3

	1957	1966
Sold within first year	13.6%	18.8%
Sold within second year	28.7%	37.4%
Sold within third year	39.0%	47.7%

It is, of course, impossible to draw a certain conclusion on the basis of these figures, but the data for all years in the survey will show whether the above result signifies a general trend or is merely due to defects in the sample. A further point suggested by these figures is that the introduction of short-term capital gains tax does not appear to have caused a postponement of sales from the first year to the second year.

There appeared to be no relationship between the size or value of a holding and the length of holding, though there was enough evidence to suggest that shareholders with holdings with a value of less than £100 in the more popular companies were tending to hold longer than those with larger holdings. This could be attributable to the greater impact of dealing expenses upon small holdings and the significance of this hypothesis will be tested in the main project.

At the foot of Table 1 the average annual rate of reduction is shown for the 1957 companies. This states the writing-down rate on a reducing balance method which would be necessary to reduce the original body of shareholders to the number still

holding at the end of the survey period. Again the wide variation between companies is clear. Still more interesting is the decline in the rate of reduction over the survey period. If shareholder behaviour were random one would expect the proportion of shareholders leaving a company each year to be roughly constant. If, on the other hand, their behaviour was determined by factors such as share-price movements then their behaviour from one company to another should vary considerably. In fact the evidence suggests that the pattern of cessation does not vary significantly from one company to another but that the rate of cessation, as explained above, does vary mainly in relation to the intangible market status of the company.

These points are evidenced in Table 4 which shows the actual percentage cessation of shareholders in each of the first five years of the 1957 companies together with the notional percentage cessation which would have been necessary to conform to the assumption that the reducing-balance method applied throughout at the rate shown in Table 1. For all years subsequent to the fifth year the percentage difference is a negative figure for every company.

TABLE 4

Sales per annum

		Company					
		1	2	3	4	5	6
		%	%	%	%	%	%
1st Year	Actual	10.6	28.0	5.8	21.8	7.0	8.1
	Notional	6.0	12.0	4.0	12.0	7.0	7.0
	Percentage difference	+76.7	+133.3	+45.0	+81.7	0	+15.7
2nd Year	Actual	8.2	27.9	5.8	23.8	16.2	8.7
	Notional	5.6	10.6	3.8	10.6	6.6	6.6
	Percentage difference	+46.4	+163.2	+52.6	+124.6	+149.2	+33.8
3rd Year	Actual	17.7	7.7	5.5	5.9	9.1	16.0
	Notional	5.3	9.1	3.7	9.2	6.0	6.0
	Percentage difference	+234.6	-16.3	+48.6	-35.9	+51.7	+166.7
4th Year	Actual	7.0	3.4	2.1	6.4	4.9	9.1
	Notional	5.0	8.2	3.5	8.2	5.6	5.6
	Percentage difference	+40.0	-58.5	-40.0	-22.0	-12.5	+62.5
5th Year	Actual	3.0	1.2	2.7	3.3	3.1	4.2
	Notional	4.7	7.2	3.4	7.2	5.2	5.2
	Percentage difference	-36.2	-83.3	-20.6	-54.2	-40.4	-19.2

Table 4 clearly suggests the existence of a class of investor who buys with the intention of holding for a medium-term period of between three months and three to four years. Comparison of this data with the share price movement during the first four years indicates that sales during that period were accompanied by an increase in the share price but that subsequent increases did not encourage further dis-

posals on the part of the original holders. It is thus argued that there is a substantial body of investors who buy with the intention of holding the shares for the medium-term and who will sell when the price has risen sufficiently to give a satisfactory profit during that period. Clearly it would be futile to test this assertion more rigorously with a sample of only six companies. However it is intended to measure the relation-

ship between price movements and sales by original shareholders in the main project. It will be particularly interesting to ascertain the response of medium-term investors to a declining price during their period of holding. The experience of York Trailer suggests that they will still sell during the medium-term.

It is thus argued that investors may be categorised into three main groups:

(a) *Stags*: These speculators buy with the intention of selling between the date of allotment and the date of first registration – normally a period of between six and 12 weeks. Their behaviour is not measured in this study but we hope to obtain access to records of dealings in allotment letters for some of the companies concerned. For the purpose of this study they will have sold out before the date of first registration partly to reduce dealing expenses and partly to restore their liquidity for further speculation.

(b) *Medium-term investors*: As explained above these investors will buy with the intention of selling within a period of three months to three to four years and will range from speculators, who hope to sell as soon as possible when the share price has recovered from stag selling, to those investors who are prepared to give the shares a run of up to three to four years and will then either take their profit or cut their losses. Although Table 4 does in fact suggest a possible horizon of up to four years it should be realised that the period of holding is overstated due to delays, which are often quite substantial, in the registration of sales. Finally the survey suggests that investors with a shorter investment horizon are most attracted by larger, well publicised issues.

(c) *Long-term investors*: These follow a static investment policy and probably only sell shares when faced with a liquidity crisis. Although it is not certain whether investors consciously follow such a policy it is one which can very easily be adopted subconsciously by assuming that shares which have done well should be retained in the expectation of further profit while those which have done badly should be held for recovery. Certainly the fact that an average of 40 per cent of shareholders in the survey retained their shares for 12 years with no change in the size of holding in the vast majority of cases suggests that a policy of inertia is being followed. A further point is that this policy is spread evenly amongst shareholders of all sizes. The largest shareholders might sometimes tend to be static because they belong to a family group which controls the company, but this cannot explain more than a few cases. In the case of the small shareholders it might be argued that their holding is too small to justify the dealing expenses involved in a

sale. However the shares of each company in the 1957 sample rose by at least 200 per cent during the survey period so that this argument loses much of its force. One argument in favour of a 'buy and hold' policy might be the successful performance of each of the six companies. However, in most cases the bulk of the growth had occurred by 1962/63 and a switch into other shares should have produced better performance.

It should be noted that the above analysis applies primarily to private shareholders, for, as explained below, institutional investors have not figured prominently in new issues of shares to the public. However, it is very likely that different types of institution will follow different investment policies. Pension funds, for instance, will probably adopt a longer investment horizon than 'go-go' unit trusts. It is, in any case, hoped that a separate project into the behaviour of institutional investors will eventually be set up.

It is, of course, dangerous to assume that a shareholder's eventual behaviour is the result of an 'ex ante' investment policy. However, the clear pattern which has emerged from the different companies in the sample suggests that the categorisation of shareholders outlined above is justified. Moreover, we intend to examine in more detail the processes by which investment policies are formulated by sending questionnaires to a sample of shareholders. This would also enable the personal characteristics of the different categories to be determined. It should be stressed that a policy of inertia is not being criticised. In fact, if one accepts the implications of the random walk hypothesis, all shares are correctly valued at any point of time subject to an insignificant fluctuation around their intrinsic value, so that only portfolio considerations would justify switching from one share to another.

The relevance to a company of analysing the characteristics of its shareholders has already been outlined by the authors.⁵ In particular a company with a preponderance of long-term investors might expect a better share price performance for as demand for its shares increased their price would need to rise substantially to induce a sale while in the event of a fall in demand shareholders are less likely to be panicked into a sale. Moreover, such investors are more likely to identify themselves with the company and may be expected to resist a takeover bid far more strongly than a body of medium-term investors and speculators.

⁵ R. J. Briston, 'The Fisons Stockholder Survey – An Experiment in Company-Shareholder Relations', *Journal of Business Policy*, Vol. 1, No. 1 (Autumn 1970), pp. 38–46; and C. R. Tomkins, 'Dividend Policy, Share Valuation and Stockholder Satisfaction', *Journal of Business Finance* (Spring 1970).

The purchase of additional shares

The number of shareholders who bought more shares in their company is indicated in Table 2. There is a considerable variation between the companies in the 1957 sample, which appears to bear no relationship to price movement, size, number of shareholders, etc. There is much less variation between the 1966 companies, but this sample only covers a three-year period. In computing the statistics of additional purchases, rights issues and bonus issues have been ignored because, unlike open market purchases, they are not based entirely upon an independent decision of the shareholder. The great majority of shareholders who increased their holding fell into the long-term investor

category. To some extent this is due to the greater length of time available to them and also it may reflect their greater involvement with the company. On the other hand the more volatile policy of medium term investors might have been expected to lead them to add to their holdings. Table 5 shows that the larger shareholders were more likely to increase their holdings.

In only one of the 12 companies did less shareholders with original holdings valued at above £500 buy more shares than the average number for all categories. Moreover this result is not due to the small number of holders in that category for in total they amounted to 1,010 shareholders out of an overall survey total of 11,384.

TABLE 5

Value of holding	Company											
	1	2	3	4	5	6	7	8	9	10	11	12
	Percentage of shareholders buying more shares											
£50 and below	15.8	7.4	18.2	17.2	21.3	7.8	0	0	0	6.8	9.3	4.3
Above £50 up to £100	7.7	4.0	20.0	7.5	29.4	8.2	5.2	4.3	1.8	4.1	7.9	3.0
Above £100 up to £150	23.3	5.7	16.4	15.2	29.2	7.6	4.2	7.4	1.3	1.9	4.4	8.2
Above £150 up to £200	50.0	12.5	0	19.8	11.1	5.6	9.5	6.2	9.8	7.7	11.1	10.8
Above £200 up to £250	25.0	15.3	13.6	8.3	50.0	8.6	12.5	25.0	0	18.2	5.6	6.3
Above £250 up to £300	22.2	37.5	14.3	11.8	57.1	4.4	2.0	2.6	0	10.0	0	8.0
Above £300 up to £350	0	0	6.7	15.6	100.0	5.3	20.0	4.3	—	0	0	5.9
Above £350 up to £400	50.0	12.5	0	0	33.3	33.3	0	3.9	14.3	33.3	—	16.7
Above £400 up to £450	16.7	100.0	0	0	0	20.8	30.8	2.7	0	6.9	13.0	6.1
Above £450 up to £500	—	7.4	16.7	0	0	7.5	—	50.0	—	50.0	—	5.4
Above £500	21.9	16.7	8.9	27.9	47.4	11.8	11.7	13.5	12.5	10.4	32.0	7.7
All categories	20.3	8.6	11.7	15.6	25.5	7.8	6.6	6.7	3.0	7.8	8.5	7.2

The Growth of Institutional shareholdings

Tables 6 and 7 indicate the extent to which institutional investors have become increasingly involved with the companies since the date of first registration.

It seems evident from these tables that institutional investors do not play a dominant part in the issue of shares to the public. Although this argument is not conclusive due to the large number of shares held by nominees it is supported by the transactions of insurance companies who do not usually use nominee status and who only took up shares in six of the 12 issues. It is quite logical for institutional investors to avoid new issues of shares to the public for if the issues are at all popular the allotments will be relatively small and will not warrant the administrative costs involved. However, there is clear evidence of increasing institutional involvement as the new companies grow in size and status. The registered institutional holdings increased as follows up to 1969:

The fact that institutional holdings increased most in the 1957 companies suggests that their acquisitions

are made gradually as a company grows in size and reputation. This would explain their relatively low involvement in the 1966 companies and is borne out by the fact that two of the three largest 1966 issues attracted most institutional buyers. There appeared to be no correlation between institutional purchases and the size of a company, its growth rate or the method of issue, though the main project may enable such a relationship to be established.

Comparison with the data published by J. Revell⁶ suggests that institutions may be taking a greater interest in smaller companies. Revell's statistics showed that registered institutional holdings comprised 19.2 per cent of all shares of companies with a total market value between £10 million and £45 million, 18.8 per cent of shares of companies with a market value between £3 million and £10 million and 13.2 per cent for market values below £3 million. Four

⁶ 'The Owners of Quoted Ordinary Shares - A Survey for 1963', published by Chapman and Hall for the Department of Applied Economics, University of Cambridge, 1966, p. 49.

of the six 1957 companies showed institutional holdings substantially higher than these figures while all of the 1966 companies are much lower. This again suggests that institutional investors are not particularly

interested in new issues and that they gradually increase their interest as the company grows and becomes more stable. This hypothesis will, of course, be more easily testable within the main project.

TABLE 6

Analysis of shareholdings by type of holder in 1957 and 1969

	1		2		3		4		5		6	
	1957	1969	1957	1969	1957	1969	1957	1969	1957	1969	1957	1969
<i>Percentage of shares held</i>												
Private individuals	78.8	66.4	93.7	32.1	61.7	36.8	34.4	21.4	89.4	54.3	90.8	40.7
Private joint	3.8	11.7	0.9	45.4	9.2	9.0	21.5	23.3	0.8	2.3	2.0	4.3
Executors	10.8	3.2	0.3	1.5	4.4	7.7	0	2.8	0.6	1.8	3.6	9.3
Overseas investors	0.8	0.5	0.7	1.9	0	0.4	13.4	3.3	0.9	0.7	0	4.6
Sundry companies, banks and corporate trustees	1.0	1.6	1.4	0.6	8.6	2.2	1.3	2.6	0.2	0.2	1.2	2.2
Insurance companies	0.8	2.9	0	4.7	5.9	4.7	2.4	12.6	0	3.4	1.3	8.0
Investment trusts	0.9	2.0	0.2	5.0	3.0	12.0	0	3.1	5.7	17.5	0.9	2.3
Pension funds	0	1.1	0.8	2.3	0	9.5	4.8	12.6	0	0	0	13.1
Nominees	3.3	10.6	2.0	6.5	7.2	17.7	22.2	18.3	2.4	20.0	0.2	15.5
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total shares in issue (m):	1.0	4.9	1.2	12.9	0.7	2.7	1.9	4.1	1.3	2.6	0.7	2.5

TABLE 7

Analysis of shareholdings by type of holder in 1966 and 1969

	7		8		9		10		11		12	
	1966	1969	1966	1969	1966	1969	1966	1969	1966	1969	1966	1969
<i>Percentage of shares held</i>												
Private individuals	32.2	30.4	65.3	32.1	84.2	35.9	79.6	73.0	77.5	81.3	16.3	21.8
Private joint	6.1	7.3	2.1	27.0	2.4	2.2	0.9	6.7	1.0	1.2	2.7	2.9
Executors	0.9	1.0	5.0	0.9	0.1	0.4	1.5	4.2	0	0.2	1.7	1.2
Overseas investors	0.3	0.7	1.1	1.0	0.1	0.1	1.5	0.7	0.1	0.1	62.0	58.0
Sundry companies, banks and corporate trustees	4.2	5.1	9.1	18.5	3.8	55.7	7.0	0.4	0.4	0.5	1.5	0.9
Insurance companies	0	0	0.3	2.9	0	0	0	0	0	0	0.2	1.8
Investment trusts	0.8	0.3	2.1	5.0	0	0	1.0	0	1.3	1.3	0.9	2.3
Pension funds	0	0	0	0	0	0	0.7	1.3	10.0	13.0	0.9	6.1
Nominees	55.5	55.2	15.0	12.6	9.4	5.7	7.8	13.7	9.7	2.4	13.9	5.0
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total shares in issue (m):	0.6	0.6	2.5	2.5	1.0	1.0	1.7	1.7	1.0	1.0	3.5	3.5

TABLE 8

Registered institutional holdings in 1957, 1966 and 1969 (percentage of shares held)

	1	2	3	4	5	6	7	8	9	10	11	12
1957	1.7	1.0	8.9	7.2	5.7	2.2						
1966							0.8	2.4	0	1.7	11.3	2.0
1969	6.0	12.0	26.2	28.3	20.9	23.4	0.3	7.9	0	1.3	14.3	9.9
Total M.V. in 1969 (£m)	5.3	13.4	4.1	7.8	1.2	1.7	1.4	2.0	0.2	1.0	3.1	3.5

Trends in techniques of issue

There appears to be a tendency for more medium-sized issues to be made through an offer for sale. The largest company which was the subject of a placing from the 1966 sample was Avimo Ltd with a total value of £330,000. In 1957 however, three of the four placings involved companies with a considerably higher value. The greater use of the offer for sale is to be applauded for it ensures that shares are made available to the general public. Each of the 1957

placings showed substantially greater appreciation up to 1969 than that provided by the two offers for sale and it seems certain that at least Clarkson (Engineers) and Rotaprint would have aroused enthusiasm had their shares been offered rather than placed.

Dispersion of shareholdings over size categories

It also seems likely that the dispersion of shareholdings on allotment has altered since 1957.

TABLE 9

Dispersion of shareholders by value of holding at date of first registration

	Company											
	1	2	3	4	5	6	7	8	9	10	11	12
£50 and below	19	203	11	64	1,183	1,145	23	15	74	222	75	23
Above £50 and up to £100	26	173	35	93	991	672	115	256	217	49	126	100
Above £100 and up to £150	30	70	55	99	219	211	119	175	74	53	91	589
Above £150 and up to £200	4	40	14	91	18	196	21	161	41	13	9	37
Above £200 and up to £250	12	85	22	36	2	186	16	4	11	44	72	222
Above £250 and up to £300	18	8	21	17	7	45	50	77	9	10	4	88
Above £300 and up to £350	1	10	15	64	2	95	5	93	—	9	9	137
Above £350 and up to £400	2	16	5	4	3	9	1	51	14	3	—	6
Above £400 and up to £450	6	1	5	4	6	5	13	110	2	29	23	34
Above £450 and up to £500	—	41	6	4	1	80	—	4	—	2	—	37
Above £500	64	36	135	68	19	51	60	223	16	67	25	247
Total	182	683	324	544	2,451	2,695	423	1,169	458	501	434	1,520
Total shareholders 1969	1,215	2,350	665	1,913	1,780	2,143	377	1,205	422	370	364	2,200

In analysing these figures, it should be realised that they relate to shareholdings at the date of first registration and not at the date of allotment. However, it is unlikely that greater dispersion would occur between those dates. In fact, it is more probable that some consolidation would take place as investors with scaled-down allotments increase their holdings.

In 1957, 38.3 per cent of all holders owned holdings with a value of up to £50 and 67.2 per cent had holdings with a value of £100 or less. The comparable proportions for 1966 were 9.6 per cent and 30.9 per cent. This increased value of holding was attributable primarily to an increase in the average size of allotment where the offer for sale method was used. Although this has resulted in allotments being made to a smaller number of shareholders it is probably more economic in the long run, for the two offers for sale in 1957 resulted in too large a body of shareholders and the number of shareholders in those companies declined considerably up to 1969. The two largest offers in 1966, however, had a smaller initial body of shareholders, but the number increased gradually thereafter. It would thus appear that there was too great a

dispersion in the offers for sale in 1957. At the same time it might be argued that the placings during that year were not sufficiently dispersed and that an offer for sale might have been more appropriate. The greater use of the offer method for smaller issues in 1966 suggests that the issuing houses, too, may have drawn the same conclusion. Finally, although there appears to be a close relationship in the 1957 companies between the growth in total value of a company and the increase in its number of shareholders, there is no such relationship in 1966 where the two companies whose total value increased most in fact lost shareholders.

Conclusions

The conclusions of this paper are necessarily tentative due to the interim nature of the study. However, even at this stage, clear hypotheses have emerged which can be more rigorously tested within the main project. The possibility that shareholders may have pre-determined investment horizons which fall within three definable categories has important implications both for theoretical share valuation models and for

corporate managers seeking to enhance the value of their shares. Moreover the significant number of long-term investors is very relevant to the controversy regarding the true nature of a company and the obligations of its directors towards the shareholders. It is intended to explore these implications and to analyse further the characteristics of different categories of investors within the main project. The identification of shareholders who are likely to buy more shares in a company is also very relevant for corporate managers both from the point of view of fund-raising and of maintaining the share price. The behaviour of institutional investors is covered only sketchily in this paper due to their neglect of public

issues. Although it is understandable that they should regard applications for such issues as unrewarding it might be thought that the period between allotment and registration when the share price is often artificially depressed due to stag selling might have been a good time during which to establish a medium-sized holding. Instead, there appears to be a tendency to wait until the company has proved itself. Finally, the changes in the method of issue and the dispersion of holdings suggest that issuing houses are perhaps now striking the right balance between issuing shares to a small number of favoured clients and dispersing them in minute quantities between an excessive number of shareholders.

Utility and Relevance - the search for reliable financial accounting information

T. A. Lee

Introduction

Recent years have seen an increasing interest by academic and practising accountants in the impact and influence of accounting information on people, the emphasis in research gradually switching away from the traditional area of the accounting process, with its procedural problems, towards the unexplored area of users and uses of accounting information. This behavioural science approach to accounting examines, *inter alia*, the various types of potential information users (and their various decisions and actions); the types of data and information available for satisfying user requirements; the particular informational needs of potential users; and the effect of particular types of information on particular user decisions and actions.¹ The purpose of this paper is to indicate the reasons for this change in emphasis in accounting thought, and to describe some of the basic concepts which underlie the new approach and which will require to be developed before any long-term progress in the search for reliable financial accounting information can be achieved.

The trouble with accounting

Until fairly recently, financial accounting thought has been dominated by two fundamental ideas – (a) the production of general purpose financial statements, and (b) the solving of problems on a pragmatic *ad hoc* basis. Both have ignored the users and uses of financial accounting information.

(a) *The effect of general purpose financial statements*

Taking company financial statements as an example it is generally accepted that throughout their relatively short history they have been consistently intended as *stewardship* reports of the directors to the shareholders.² However, because of the increase in the last

fifty or so years in the degree of public interest in corporate affairs and also because of the equivalent development of capital markets and investment communities, company financial statements currently have a varied readership, encompassing a number of informational needs, and a variety of different decisions and actions. In other words, starting as specific statements for a specific user group, company profit and loss accounts and balance sheets have become general purpose statements for potential use by a variety of users. Bankers, creditors, lenders, trade unions, potential investors and government agencies are all presumed to make some use of these statements (albeit after suitable adaptation). Indeed, there is little other formal financial information for them to use as a basis to their decisions. The result of this unplanned development has been as follows:

(1) The actual, as distinct from the intended, users

behalf of the shareholders, and the means by which these resources had been financed. The stewardship approach appears to be supported by the Institute of Chartered Accountants in England and Wales in two of its statements, currently still in use:

(a) *Recommendation on Accounting Principles* N15, 'Accounting in relation to changes in the purchasing power of money', 1952, p. 1:

'The primary purpose of the annual accounts of a business is to present information to the proprietors, showing how their funds have been utilised and the profits derived from such use. It has long been accepted in accounting practice that a balance sheet prepared for this purpose is an historical record and not a statement of current worth. Stated briefly, its function is to show in monetary terms the capital, reserves and liabilities of a business at the date at which it is prepared and the manner in which the total monies representing them have been distributed over the several types of assets. Similarly a profit and loss account is an historical record. It shows as the profit or loss the difference between the revenue for the period covered by the account and the expenditure chargeable in that period. . . .'

(b) *Statement* S8, 'Accountants' liability to third parties', 1965, p. 2:

'... the object of the annual accounts is to assist shareholders in exercising their control of the company by enabling them to judge how its affairs have been conducted.'

'... the purpose for which annual accounts are normally prepared is not to enable individual shareholders to take investment decisions.'

(Italics added.)

¹ For a wide range of readings on this subject, see William J. Bruns, Jr, and Don T. De Coster, *Accounting and Its Behavioural Implications*, McGraw Hill, 1969.

² For example, it was not until the Companies Act 1948 that companies were required to present financial statements other than balance sheets which were intended to describe the resources administered by the directors on

of company financial statements have not been properly identified, and their various decisions, actions and informational requirements have tended to be ignored;

(2) consequently, the informational contents of the financial statements have never been adequately related to user needs and requirements. Succeeding company legislation has, on the whole, consistently increased the quantity of accounting information to be disclosed without deliberately relating particular items to particular users and uses. The guideline adopted has mainly appeared to be that further disclosure should be made because it is presumed to be 'helpful', or because it is presumed to be 'useful'.³ However, the questions 'helpful and useful to whom?' and 'for what purpose?' have never been asked, let alone answered;

(3) therefore, the *utility* and the *relevance* of accounting information to its users, or potential users, has been consistently *assumed* to exist without an adequate testing of the validity of these hypotheses. Indeed, there is little authoritative evidence to suggest that the statements are being adopted for use, or even being used at all. Information user reactions to the traditional accounting information produced for shareholders remain untested, and there is therefore no way of telling at present whether or not it is satisfactory; and if it is not, what would require to be produced in order to achieve satisfaction.

Producing general purpose objects inevitably tends to create a situation in which distinctly individual needs and preferences are ignored. Consequently, the utility and relevance of the objects to these needs, etc., are brought eventually into disrepute. Such, it is submitted, is the case with current company financial statements.

(b) The effect of pragmatic ad hoc problem solving

Accounting thought has developed for many years on an *ad hoc* basis, in which particular practical problems of the moment have been observed and analysed *in isolation* in order to find a useful practical solution.⁴ The unfortunate result has been the inevitable 'stockpiling' of accounting methods, pro-

cedures and rules, often totally unrelated and inconsistent with one another, and often completely lacking the support of a justifying theoretical structure – the inventory of methods, etc., being available for use in a variety of different situations, irrespective of the individual problems which gave rise to particular methods in the first instance. As in (a) above, the basic reasoning behind this approach has been to produce useful information by trying to find useful solutions to pressing problems. But again, without asking the fundamental questions – 'useful to whom?' and 'for what purpose?'. The creation of a seemingly unprincipled structure of accounting practices has unnecessarily and unjustifiably increased the flexibility of accounting towards the 'horror' situation portrayed by Chambers of over one million different ways of describing, in accounting terms, the same set of business activities, events and circumstances.⁵

Recent developments in accounting

As previously suggested, the last decade has witnessed the beginnings of a new emphasis in accounting thought, in which accountants have become much more aware of the users of accounting information. It is further suggested that this change has been due mainly to, firstly, a growing awareness by accountants of their responsibility to persons other than those with whom they have a contractual relationship; and, secondly, the pressing need to bring greater uniformity to accounting practice.

(a) The effect of third party claims

In 1931, in an American court case, *Ultramares Corp. v Touche, Niven and Co.* (255 NY 170, 174 NE 441), it was held that an accountant was normally liable for negligent misrepresentation solely to the person or persons with whom he had a contract, or to a known primary user of the information. It was also held in the same case that liability to a wider group of information users might be possible if fraud, on the part of the accountant, was proved. This decision, concerning the relevance of general purpose financial statements to users other than shareholders, has been upheld in several other subsequent cases, including a British one, *Candler v Crane, Christmas and Co.* (1951, 2 KB 164). In 1963, however, because of a decision in a non-accounting case in Britain, *Hedley, Byrne and Co. v Heller and Partners Ltd.* (2 All ER 575), the possibility of liability to a wide range of users of general purpose financial statements was seriously analysed and considered⁶ by the various professional

³ Disclosure has also been influenced to a great extent by correct decisions – for example, that in *Rex v Kylsant* (1931, 48 TLR 62) regarding secret reserves in the balance sheet.

⁴ Examples of this type of approach can be seen in any of the following:

(a) *Recommendations on Accounting Principles*, ICAEW, 1942 onwards;

(b) *Accounting Research and Terminology Bulletins*, AICPA, 1961 (revised edition); and

(c) *Opinions of the Accounting Principles Board*, 1961 onwards.

⁵ Raymond J. Chambers, 'Financial Information and the Securities Market', *Abacus*, September 1965, pp. 15–16.

⁶ See, for example, 'Accountants' Liability to Third Parties', *Statement S8*, ICAEW, 1965.

accountancy bodies. In the same year, in Australia, the affairs of Reid-Murray Holdings Ltd. were investigated by Government inspectors, and it was found that the accounting information contained in the customary financial statements to shareholders was, at least in this instance, potentially inadequate for the needs and requirements of other users, such as debenture-holders.⁷ In America, at the present time, there are two cases pending, *Carpenter v Hall* (The Westec Corp. case) and *Fischer v Kletz* (the Yale Express case), in which the long-held decision in the *Ultra-mares* case is being challenged.⁸

The above is a very brief description of some of the more important cases or situations which, particularly in very recent times, have emphasised the fact that there are a large number of persons, other than shareholders, who are not only using the accounting information produced for the latter group, but are also having to rely heavily on the auditor's independent attestation to its credibility. What this implies is not so much the fact that information of this type can be subject to negligent preparation, but that general purpose financial statements are not in their present form, being adequately related to the informational needs and requirements of their users. What is also suggested is the growing public interest in corporate affairs which could be better recognised in the accounting information produced by companies to describe their economic activity and financial affairs.

(b) *The effect of flexibility in accounting practice*

Particularly in America, the post-war years have seen a dynamic growth in the investment community, and this has resulted in an increasing percentage of the population making use of accounting information, either directly or indirectly. From this development, two specific information groups have emerged to take a professional interest in the quality and reliability of such information – financial journalists and analysts. In many respects, they have helped to expose many of the frailties of modern accounting to the public at large. Of particular concern to them, and to many academics and practitioners, has been the increasing flexibility of accounting practice under the guise of so-called 'generally accepted accounting principles'. The fact that the public has been made aware of the situation, and is likely to lose confidence in accountants and accounting information as a result, has prompted the professional accountancy bodies on both sides of the Atlantic to take remedying action.

In 1959 the AICPA set up its Accounting Principles Board (APB), together with an Accounting Research Division (ARD), their initial task being to look at the conceptual aspects of accounting in order to formulate basic postulates and broad principles. For the first time, authoritative recognition was given to the need to build a theoretical structure with which to justify accounting practices. The AICPA emphasis was on a *deductive* approach to theory – that is, deducing an acceptable and appropriate series of accounting methods, procedures and rules from explicit postulates and principles. The APB published two Accounting Research Studies (ARS) in 1961 and 1962 on postulates and principles respectively. Unfortunately, both proved to be unacceptable to the AICPA at the time.⁹ Their main fault was that they did not effectively examine the underlying objectives and assumptions in accounting – ARSI in fact ignored the objectives of accounting almost entirely, and was mainly a study of the most obvious concepts in current accounting, rather than an analysis of the postulates which are implicit in these concepts. However, the present failure of the APB to produce an acceptable accounting theory has had an interesting and important side-effect. It has made accounting academics and practitioners much more aware of the fact that in order to produce an acceptable and coherent structure of theory and practice, the objectives of accounting must be formulated first; and that before this can be successfully undertaken, the potential users of accounting information must be identified and observed, and their informational needs defined.

Early in 1970, in a similar response to that of the AICPA regarding the growing criticism of the flexibility of accounting practices, the ICAEW set up its Accounting Standards Steering Committee, in association with the Scottish and Irish Institutes, in an attempt to introduce more uniformity to the procedural aspects of accounting.

(c) *The combined effect of (a) and (b)*

Because of an emerging dissatisfaction with general purpose financial statements, and with the ever-increasing flexibility of the related accounting practice, accountants have been forced to examine two specific accounting ideas, both of which are *behavioural* by nature – that is, concerned with the impact of accounting information on the behaviour of its users. They are, firstly, *utility* (the ability of accounting information to satisfy its users' informational needs

⁷ Edward Stamp, 'Independence – an Australian Case', *Accountancy*, August 1964, pp. 685–690.

⁸ Henry B. Reiling and Russell A. Tauseig, 'Recent Liability Cases – Implications for Accountants', *The Journal of Accountancy*, September 1970, pp. 39–53.

⁹ See Maurice Moonitz, 'The Basic Postulates of Accounting', *Accounting Research Study No. 1*, AICPA, 1961, and Robert T. Sprouse and Maurice Moonitz, 'A tentative set of broad accounting principles for business enterprises', *Accounting Research Study No. 3*, AICPA, 1962.

and requirements), and, secondly, *relevance* (the ability of accounting information to usefully influence or relate to the decisions and actions of its users). The philosophy behind this approach is that because of the growing emphasis on 'consumer satisfaction' in relation to accounting information, it must have the potential to satisfy known informational needs (the objective of *utility*), and it must also have the potential to influence or relate to the decisions and actions which give rise to these needs (the standard of *relevance*). For this reason, it is suggested that utility and relevance should form the criteria to any future theory of accounting, and that they should be developed as more is learnt about the impact of information on people's behaviour. The next sections describe how utility and relevance have been developed to date.

The objective of utility

The desire to produce useful accounting information is not a new idea. Indeed, it must be presumed that it has been an implicit objective of accounting throughout its long history, the basic aim being to produce information to increase knowledge and reduce uncertainty. However, it has only been in very recent times that the so-called *utilitarian* concept of accounting has been explicitly recognised or even discussed. The trouble has been that utility has appeared to be too vague a concept to exist on its own and, without answers to the questions 'useful to whom?' and 'useful for what purpose?' it has remained virtually unexplained and undeveloped. As Spacek has remarked:

'We in the profession must be able to give reasons for the accounting we believe a client should follow. These reasons must have real meaning in the everyday economics of life. We often hear that the authority for proper accounting is the "utilitarian concept", or the utility of the statements. That concept, however, means nothing unless the utility sought is specifically defined. Even, erroneous accounting is "utilitarian" to the unscrupulous. So the word "utilitarian" is not used in everyday accounting work because it is meaningless.'¹⁰

On the other hand, it becomes far more meaningful if the users and uses of accounting information are known and defined, and if it is relevantly related to these users and uses when the objectives of accounting are being formulated.¹¹ Indeed, one of Spacek's

main complaints of contemporary accounting in general, and of accounting research in particular, is that at no time have the objectives and purposes of accounting been definitively established and published,¹² thereby making it impossible to state specifically whether or not the traditionally produced accounting information has been useful to its users. Backer has underlined this point:

*'An understanding of who uses accounting reports and for what purposes is a necessary prerequisite to sensitive reporting. Admittedly, the actions of individuals may deviate from the norm of the group with which they are identified; individuals may be members of several groups; and, group conflicts may exist. These are measurement problems faced in all of the social sciences. They can and are being resolved in terms of normative group action patterns.'*¹³ (Italics added.)

This difficulty of acknowledging the overall objective of utility in accounting, without having a precise knowledge of information users and uses, has also been recognised by the Committee to Prepare a Statement of Basic Accounting Theory of the American Accounting Association (AAA) when, in 1966, in the introduction to its monograph, it strongly advocated utility as the all-inclusive criterion for accounting information.¹⁴ However, because of the inherent vagueness of the term, it advocated four standards to support it. Information relevance was emphasised as the primary one. The Committee felt it would be extremely difficult to establish the utility of accounting information, the user often not being aware of its usefulness. It also felt, however, that to establish relevance as the most important aspect of information utility would be much more feasible – the basic principle being that if the information was relevant, it should be useful as well.

The problem, however, is then one of deciding when information is relevant and when it is not – and thus, of determining which measurements are relevant, and which are not.

¹¹ For a totally contrary view to this one, see Edwin H. Caplan, 'Relevance – A "Will-o'-the-Wisp"', *Abacus*, September 1969, pp. 48–54. Caplan argues that utility and relevance are much too general terms to provide logical or workable criteria of use in producing an acceptable theory of accounting.

¹² See, for example, Spacek's comments in Maurice Moonitz, 'The Basic Postulates of Accounting', *Accounting Research Study No. 1*, AICPA, 1961, pp. 56–57.

¹³ Morton Backer, 'Accounting Theory and Multiple Reporting Objectives', in *Modern Accounting Theory*, Morton Backer, ed., Prentice-Hall, 1966, p. 448.

¹⁴ The Committee to Prepare a Statement of Basic Accounting Theory, *A Statement of Basic Accounting Theory*, AAA, 1966, p. 3.

¹⁰ Leonard Spacek, 'The need for an accounting court', in *A Search for Fairness in Financial Reporting to the Public*, Arthur Andersen and Co., 1969, p. 28 (part of a speech of the same title to the American Accounting Association in 1957).

The standard of relevance

Relevance is a comparative newcomer to the conceptual framework of accounting, being authoritatively introduced and derived by Chambers in 1966.¹⁵ He defined the standard as:

'... the property by virtue of which a statement, singular or aggregative, has potential for selecting responses in an actor at a point in time.'¹⁶

Placing this within an accounting environment, relevant information should be regarded as that which is capable of having a bearing or influence on the behaviour of a decision maker, this being expressed in terms of its effect on his decisions and actions. However, as Chambers has pointed out, relevance demands a knowledge of

- (a) the identity of decision makers;
- (b) the environment in which their decisions and actions are made, and
- (c) the type of decisions and actions they may make.¹⁷

Chambers proceeded to differentiate between accounting information with the property of *general* relevance, and that with the property of *particular* relevance. He categorised general relevance as the state of relevance applicable to the work of the information processor, whereby that person takes into account as many of the possible decisions and actions of the decision maker as he can anticipate.¹⁸ In this way, the processor should produce information which has not been related to any specific action or decision he has anticipated. In other words, the information should be *objectively* produced:

'Relevant statements, being objective statements, do not relate to or contemplate any specific potential choice or future situation of an actor. Relevance is a general property; its reference is any and all of the actions available to an actor at a given time.'¹⁹

Particular relevance, on the other hand, was interpreted by Chambers as the state of relevance applicable to the decision maker when he takes the generally relevant information, and specifically applies it to the particular decisions and actions he chooses to make.²⁰ This aspect of relevance should not affect the information processor:

'The processor can have no personal criteria of relevance; what is relevant to an actor is determined by reference to the actor's objectively determinable interactions with his environment.'²¹

ACCOUNTING AND BUSINESS RESEARCH

In order to maintain this vital distinction between general and particular relevance, Chambers advocated the recognition of an additional concept – information *neutrality*:

'Neutrality is the property by virtue of which a statement, singular or aggregative, is relevant whatever ends are selected by the actor for consideration.'²²

Consequently, the information should be capable of influencing or having a bearing on as many different decisions and actions as possible, and the information user should be capable of transforming the generally relevant into the particularly relevant. Whether, however, absolute relevance in the sense envisaged by Chambers is a practical possibility is another matter. Such neutrality remains at present a completely untested hypothesis. Unfortunately, Chambers did not develop his thesis to its ultimate conclusion. He did not explain how relevance, either general or particular, could be found and tested in practice.

In the same year as Chambers' views on information relevance were published, the AAA Committee to Prepare a Statement of Basic Accounting Theory issued its report on the standards of accounting.²³ It advanced relevance as the primary standard, defining it in the following manner:

'*Relevance* is the primary standard and requires that the information must bear upon or be usefully associated with actions it is designed to facilitate or results desired to be produced. Known or assumed informational needs of potential users are of paramount importance in applying this standard.'²⁴

As previously explained, the Committee proposed relevance as the most important characteristic of the overall criterion of information utility. However, despite repeatedly stating that there must be a knowledge of information users and their decision models before there can be relevance, the Committee did little to suggest how this knowledge could be gained in order to make the standard a practical reality. Instead, at one point, it noted a few general groups of assumed users, and then proceeded to suggest there should be more reliance on general purpose financial statements (the user relevance of which remains completely untested at the present time).²⁵ A similar procedure was followed in the advocacy of multiple valuation financial statements.²⁶ However,

¹⁵ Raymond J. Chambers, *Accounting, Evaluation and Economic Behaviour*, Prentice-Hall, 1966, pp. 154–156.

¹⁶ Chambers, *op. cit.*, p. 164.

¹⁷ *Ibid.*, p. 154.

¹⁸ *Ibid.*, pp. 154–6.

¹⁹ *Ibid.*, p. 149.

²⁰ *Ibid.*, pp. 154–6.

²¹ *Ibid.*, p. 155.

²² *Ibid.*, p. 164.

²³ AAA Committee, *op. cit.*

²⁴ *Ibid.*, p. 7.

²⁵ *Ibid.*, pp. 20–21.

²⁶ *Ibid.*, pp. 27–31.

in order to develop its relevance model, the Committee, rather like Chambers, suggested certain other secondary information standards which, on occasion, could act as constraints to the attainment of relevance.²⁷

These additional standards were defined as follows:

(a) 'Verifiability requires that essentially similar measures or conclusions would be reached if two or more qualified persons examined the same data.'

(b) 'Freedom from bias means that facts have been impartially determined and reported.'

(c) 'Quantifiability relates to the assignment of numbers to the information being reported.'²⁸

In 1968, Shwayder took the AAA relevance standard, and proceeded to develop it further. His reason for doing this was the failure of the AAA Committee to explain how relevance should be practically implemented.²⁹ Shwayder suggested the following developments:

(a) The need to distinguish *relevance* (which he defined as a qualitative characteristic of information, independent of the characteristics of the measurement process) and *materiality* (which he defined as a quantitative characteristic of information, directly related to the measurement process – that is, to deviations in the value of a relevant statistic).³⁰ In other words, he felt that relevant accounting information should be looked at at two different levels: firstly, at the level of its overall pertinence to the user (relevance), and, secondly, at the level of its significance in relation to its influence on its user (materiality);

(b) the need to distinguish three levels of accounting information relevance:³¹

(1) *semantic* – the relevance of the meaning of the message to the user;

(2) *decision* – the relevance of the message to the decision of the user, and

(3) *result* – the relevance of the message to the goals of the user.

Thus, Shwayder suggested that accounting information can only be relevant if its meaning is understood by the user, thereby allowing it to influence his decisions, and, therefore, to affect his goals. He further emphasised that it is easier to test both semantic and decision relevance (which are binary by nature) than to test result relevance (which is continuous).³²

(c) the need to identify the constraints on information relevance as:³³

(1) the *validity* or truthfulness of the information. (However, he did not ask the question 'what is truth in accounting?');

(2) the *comprehensiveness* of the information – the more comprehensive it is, the fewer alternatives there are to investigate for relevance; and

(3) the existing *state of knowledge* of the user.

Shwayder did not develop the materiality aspect of relevance, his purpose being to examine the qualitative aspects of the standard. Hendriksen, on the other hand, whilst regarding relevance as a specific objective of accounting, has treated materiality as a constraint on the latter – that is, he believes that accounting information can only be relevant if it is materially relevant.³⁴ The question, however, which remains is 'what is material?'.³⁵ Finding the answer to this is the subject of another paper.

Utility, relevance and the future

The previous sections have attempted to describe the very recent interest in the related accounting topics of accounting information utility and relevance. This interest is, at the present time, largely undeveloped, but writings strongly suggest that the key to reliable accounting information may lie in an exploration of these topics rather than in the current predominant research effort to find accounting principles to support and justify information which may not be very useful or relevant. Both utility and relevance rely very heavily on a knowledge of information users and their behaviour, and, therefore, any further research will be of necessity psychological in nature. Evidence of research into the effects of accounting information on behaviour has already been carried out, but mainly in the field of management accounting.³⁶ In the field of financial accounting and reporting to external interests, the behavioural sciences have played little part in developing theory and practice to date, and it is suggested that research work should be directed to find out how useful and relevant different types of accounting and non-accounting information are to different kinds of decision makers. This will undoubtedly prove to be

²⁷ Ibid., pp. 93–6.

²⁸ Eldon S. Hendriksen, *Accounting Theory*, revised edition, Irwin, 1970, pp. 102–6.

²⁹ See, for example, Warren Reininga, 'The Unknown Materiality Concept', *The Journal of Accountancy*, February 1968, pp. 30–35.

³⁰ See, for example, Edwin H. Caplan, 'Behavioural Assumptions of Management Accounting', *The Accounting Review*, July 1966, pp. 496–509; Jacob G. Birnberg and Raghu Nath, 'Implications of Behavioural Science for Managerial Accounting', *The Accounting Review*, July 1967, pp. 468–79.

³¹ Ibid., p. 27.

³² Ibid., p. 7.

³³ Keith Shwayder, 'Relevance', *Journal of Accounting Research*, Spring 1968, pp. 86–97.

³⁴ Shwayder, *op. cit.*, pp. 86–9.

³⁵ Ibid., pp. 89–91.

³⁶ Ibid., pp. 91–3.

an extremely difficult task because accountants are not trained psychologists, and few psychologists have shown interest in measuring and analysing the impact and effect of accounting information on people's behaviour.³⁷ However, the following plan of work is suggested to try to ensure that accounting information is going to meet the required standards of utility and relevance:

(a) Research into the effect of the present type of general purpose financial statements on the behaviour of decision makers

The purpose of this work should be to measure the utility and relevance of current financial statements, in order to establish how satisfactory they are in meeting the information needs and requirements of their users. In particular, empirical evidence is required of the various persons and bodies who are making use of the information; of how they are using it; and for what purpose. The idea behind this type of research is mainly to build up a much needed skill and experience in dealing with the effects of accounting information on people's behaviour, whilst at the same time gaining a valuable knowledge to use in the second stage described below. This will require research into the following topics:

- (1) establishing which decision makers are making use of current general purpose financial statements. At the present time, there is little formal evidence of which decision makers are making use of current information. All that exists is a rather informal, and presumed, knowledge of its users;
- (2) determining the nature of the problems, decisions and actions with which each of the established decision making groups are concerned. This should be done to establish the uncertainties which the decision makers require knowledge about before making their decisions. (The above two points should yield empirical evidence about the type of decisions, etc., to which current financial statements are *assumed* to be useful and relevant;³⁸)
- (3) inquiring into the degree of information *adaption* generally undertaken by each of the defined user groups, prior to the information's use as a basis to uncertainty reduction and problem solving. It is vital to an understanding of information utility and relevance to find out if it has to be put in a form different from its original, before it is suitable for use. Such an inquiry should not only be con-

cerned with the forms of adaption, and how such a process took place, but also with the reasons why it took place – in other words, the users' motives for adaption. This, following the ideas of Chambers (previously mentioned), should be done in an attempt to establish the general and particular relevance of current information – that is, the degree of adaption which is necessary to convert it from the generally to the particularly relevant;

(4) investigating into the *attitudes* of the various information users towards the current type of accounting information supplied to them. This sort of study is needed in order to find out how users view the usefulness and relevancy of present-day information – in other words, to find out how satisfied they are with it. Studies in this area should include research into:

- (4.1) user *beliefs* with regard to the information – that is, what they believe the information is describing, how they regard its quality, reliability and suitability, and, basically, why they hold these views. For example, to find out how much the long established traditional form of financial statements has conditioned information users into believing that it is the only satisfactory type of information available to meet their decision needs and requirements;
- (4.2) the degree by which current accounting information is *distorted* by user bias – for example, by misconception or by preconception. Information is often 'twisted' by its user to describe what he *wants* it to describe. Often this can be an unconscious process. It must be distinguished from information adaption which is a deliberate process used by the decision maker to convert the generally relevant into the particularly relevant; and
- (4.3) the '*value*' which information users place on current financial statements, particularly in relation to other types of information which influence their decisions and actions – that is, the importance they place on these statements *vis-à-vis* other information.³⁹

(b) Research into the effect of different types of information on the behaviour of decision makers

Having attempted to establish the utility and relevance of current accounting information to defined decision makers, the next stage should be concerned with research to find the types of information which are the most useful and relevant to particular groups of

³⁷ A notable exception to this general rule is Selwyn W. Becker, examples of whose work in this field can be seen in William J. Bruns and Don T. De Coster, *Accounting and Its Behavioural Implications*, McGraw-Hill, 1969.

³⁸ Research of this type appears to have started at the University of Lancaster – see *Accountancy Age*, 4.12.70, p. 11.

³⁹ For a discussion on how to value information, see Norton M. Bedford, 'Measuring the Value of Information – An Information Theory Approach', *Management Services*, January/February 1966, pp. 15–22.

decision makers. The evidence gathered in research stage (a) should be used as a basis to this work. This should involve the following inquiries:

(1) research into other types of accounting and, perhaps, non-accounting information which may prove more useful and relevant than the conventional type at present produced. At present the suitability of other types of accounting information, and economic and social information, to decision makers has been largely ignored because of the presumed suitability of current accounting information. In order to give the best consumer service, all the alternatives should be explored and 'test' marketed;⁴⁰

(2) classification of the different decision maker groups into several large groups, compiled on the basis of similarity of decisions and actions. This may result in established user groups (such as, investors) being split up into several decision making groups. In other words, decision makers should be classified in accordance with their decisions rather than with their main activity; and

(3) bearing in mind the research advocated in (a) above, there should be laboratory and 'real-world,

tests of the different types of information established in (1) above in order to determine their general relevance, and thus, their utility to each of the groups defined in (2) above. The difficulty at this stage will be to isolate the impact of information on decisions and actions from all the other influences affecting the latter factors. Experimentation of this type should be conducted carefully, new types of information being introduced gradually so as to offset any natural reactions against change. This work can only be done with the help of psychologists.

The underlying principle to be followed, however, in all the above areas is one suggested by Bedford: 'If information is to be useful, it must help a decision-maker decide what to do. It must reduce his uncertainty about future acts.'⁴¹

It must inform him of the alternatives he must examine before making a decision or taking action. It must help him to interpret the factors which are vital to his decision making functions. If it does not do these things, it cannot be stated to be reliable information. It cannot be said to satisfy the criteria of utility and relevance.

⁴⁰ For example, see Orace Johnson, 'Towards an "Events" Theory of Accounting', *The Accounting Review*, October 1970, pp. 641-53.

⁴¹ Norton M. Bedford, 'Information and Communication Aspects of Accounting Principles', 1967 Invitation Lecture, New Zealand Society of Accountants, University of Wellington, 1967, p. 8.

Hardwood, Softwood and Plywood Company

A Case Study

John Sizer

The Hardwood, Softwood and Plywood Company are timber traders, sawmillers, manufacturers, and general merchants. The company has trading branches located in Belfast, Bath, Cardiff, Greenock, Manchester, Leeds, Newcastle, Birmingham, Nottingham, and a further three in London. It also has a number of plants manufacturing plywoods, wallboards, etc., which are sold to trading branches, builders' merchants, furniture manufacturers, other timber merchants, etc. The company was first registered in 1908, and had a turnover in 1969 of £23 million and a profit before taxation of £800,000. The company's net assets employed on 31 December 1969 amounted to £5.35 million (see Table 1).

Each branch or plant is run by a manager as a profit centre with its own assets employed and profit and loss account. Managers are required to prepare annually for their unit budgets for sales, costs, capital expenditure, and assets employed for the forthcoming year by months. Each month returns are made to head office comparing actual with budgeted performance. Mr Teak, the managing director of Hardwood, Softwood and Plywood Company, recognises the company has a number of growth opportunities, but is under some pressure from the company's bankers to maintain the company's bank overdraft at its present level. He wishes to secure a more effective allocation of capital to units and to encourage each manager to improve the return on the capital his unit employs. He has developed with Mr Sawdust, the Financial Director, the concept of *interest-free capital* for this purpose. On 1 December 1969 he sent the following memorandum to all branch and plant managers.

FORECAST BUDGETS AND MONTHLY ACCOUNTS

My memorandum of 13 November requesting your 1970 forecasts referred to the need for the planned progressive development of each unit and a substantial increased return on the capital that each unit employs. In this connection, we are intro-

ducing as from 1 January 1970 certain changes in the monthly returns and I should like to give you further information about these.

1. Background to changes

The main limiting factor in our expansion is the availability of capital. *We can raise additional permanent capital if there is a sufficiently strong case based on the prospective additional profits that we can achieve with its use.* At present the average rate of return on capital that we employ is too low and this makes it necessary for us over the next year or two to withdraw money from prospectively less profitable units in order to make possible the expansion that we want to see in prospectively more profitable units.

We would like to encourage the Manager of each unit to apply for a much larger capital allocation if, by employing more money, he can increase his unit's profitability. There is, of course, a top limit to the amount of capital available which must be watched by us. At the same time we want to encourage him to economise wherever practicable in the use of money both on short term (this means the control of stocks and debtors) and long term (this involves the termination of operations that are insufficiently profitable). In allocating capital for the coming financial year we shall be guided by the prospective profit from its use that the Manager indicates in the forecast budget as well as by any longer range development plans.

2. Principal changes

From 1 January 1970 the monthly accounts for each unit will be drawn up with a view to emphasising the objectives and limitations that apply to the Company as a whole.

Our available resources are obtained as follows: (a) Shareholders' funds represented by issued share capital and reserves on which we have to try to produce the highest possible return on a maintain-

TABLE 1

Hardwood, Softwood, and Plywood Company

FINANCIAL INFORMATION 1968 and 1969

	1968	1969
	£'000	£'000
Turnover	19,935	22,950
Trading Profit	3,690	1,015
Directors' Emoluments	58	60
Depreciation	118	138
Interest paid less received	95	117
	269	215
Profit before Tax	421	800
Corporation Tax	130	290
Net Profit	£291	£510
Current Assets		
Stocks	3,075	2,785
Debtors	4,000	4,838
Bills Receivable	156	108
Cash	326	420
	7,557	8,149
Current Liabilities		
Creditors	2,288	2,513
Bills Payable	71	80
Bank Overdraft	1,669	1,524
Corporation Tax	92	162
Ordinary Dividend	120	147
	4,240	4,426
Net Current Assets	£3,317	£3,723
Fixed Assets		
Freehold Properties	959	983
Leasehold Properties	205	200
Plant & Machinery	281	288
Vehicles	57	87
Furniture	16	21
	£1,518	£1,579
Investments	56	46
Net Assets Employed	£4,891	£5,348

able basis.

(b) Fluctuating trade credit from our suppliers.

(c). Bank facilities.

The total of these resources is applied principally to

- (i) Stocks
- (ii) Debtors
- (iii) Fixed assets

Each unit employs a certain amount of capital (money) which may be regarded as being permanently invested in its business. In future, we shall call this permanent capital of each unit its *interest-free capital*. This will consist of its fixed assets plus

a rough but effective estimate (which we propose to revise annually or if necessary more frequently) of its normal *minimum* level of stocks and debtors at any time during the year. We shall, of course, view it in conjunction with your forecast of profitability. Our regular revision of your *interest-free capital* will ensure that changes in the basic hard core of trading capital requirements are taken into consideration.

In addition to this permanent *interest-free capital*, each unit has fluctuating requirements for additional money which in general must come from the group's bank overdraft. We shall fix each unit's

maximum capital allocation in relation to its trading possibilities. The money employed by each unit over and above its *interest-free capital* will, in future, be charged for at a rate of $\frac{1}{2}$ per cent over bank rate subject to a minimum of 5 per cent. Special adjustments will be made as hitherto for exceptional credit terms obtained from suppliers.

In future each unit's maximum capital allocation will be subject to more frequent and substantial change – either upwards or downwards – in the light of its respective requirements and the profitability as set out in its forecast budget. From January 1970 onwards the profit of each unit will be expressed in the monthly accounts as a *percentage annual rate of return on its interest-free capital*. This profit will, of course, be struck after charging interest on the money used in excess of its *interest-free capital*.

3. *What are the advantages of this new method of operating?*

First of all, each unit will have a strong incentive to keep its *interest-free capital* down to the lowest possible level in order to maximise the rate of return on it. This means rigorous and continuing control of debtors and stocks.

Secondly, the wisdom of taking on a particular business by utilising the extra capital on which interest is payable will depend upon the gross profitability of that business, upon the stock requirements it creates and the length of credit that has to be given to achieve the business.

Thirdly, the new method of analysing your operations will give guide lines for improving the rate of return on *interest-free capital*. The Manager of each unit will be giving continuous consideration to the opportunity to expand his unit and conversely to reorganising or terminating operations that reduce his unit's rate of return on *interest-free capital*, which might release money for expansion in more profitable operations. When opportunities for expansion arise the Manager will have to persuade us to increase his maximum capital allocation on the basis of his plan for making that increased capital earn a substantial rate of return.

4. *Head Office charges*

In future we shall extract from the Head Office charges that are debited to branches the basic cost of Group management – items such as directors' salaries not already apportioned, certain administrative salaries such as statistician, etc. – leaving only the charges which are attributable to you in your accounts. Although they are not all fully under your control this breakdown will simplify your costing.

5. *Management bonus scheme*

All these changes will affect the present management incentive bonus scheme which will have to be altered and we hope to have the revisions ready shortly.

6. *Interest-free capital estimate*

Will you now please prepare your estimate of *interest-free capital* that you require for 1970, on the attached form (Table 2) and submit this figure to Mr Sawdust not later than 1 February.

A. N. TEAK

The completed asset requirement forms were vetted by Mr Sawdust's staff, and summarised as in Tables 3 and 4. This information was presented to Mr Teak who agreed with Mr Sawdust the maximum capital allocation for each unit. On 11 January 1970 Mr Teak sent the following letter to unit managers.

CAPITAL ALLOCATIONS INTEREST-FREE AND MAXIMUM CAPITALS

At the foot of this note you will see that the interest-free capital for the financial year 1970 and the maximum capital allocated to your branch are shown.

1. *Interest-free capital*

We have already discussed this concept in detail and your rate of return on capital will be calculated by relating your net profit to your interest-free capital. This capital should be your normal minimum requirements for the running of the business, including your fixed assets.

2. *Maximum capital*

In addition to your interest-free capital a further amount of capital is allocated to you which it is our intention that you should utilise *to the full extent* that you can profitably do so. This capital will be available to you at Bank Rate plus $\frac{1}{2}$ per cent so that in utilising it you will be able to calculate the marginal costs of its use and ensure that a profit is made over and above the marginal cost of the money.

3. *'Peak' capital*

There will be some occasions when, having exhausted your maximum capital you have the opportunity of increasing your business and its profitability by the use of a still further quantity of money. This the Board encourage you to do provided they have the funds available. No figure of 'peak' capital will be given as availability will depend upon the day-by-day position of the

TABLE 2

Hardwood, Softwood, and Plywood Company

Unit:

ASSET REQUIREMENTS FOR 1970

	Minimum (interest-free) Amount	Average Amount over 12 months	Maximum Requirement
	£	£	£
Fixed assets			
Stocks			
Book debts and bills receivable			
Import deposit	NIL		

Notes:

(1) *Fixed assets:*

Estimate net book value at 31 December 1969, and add 50 per cent of proposed additions for 1970. Enter the result in all three columns.

(2) *Stocks:*

The amount for the middle column should correspond with estimated average stock required in 1970 forecast.

(3) *Import deposit:*

Import deposit balances will not form part of the interest-free assets. They will be subject to interest charged monthly in overheads and this cost must be balanced by extra gross profit margin.

The interest-free assets amount will form the basis for charging interest and for assessing the Annual Return of Net Profit.

company. However, if you can see your way to do what appears to you to be a profitable business, having calculated the marginal cost of the money at Bank rate plus $\frac{1}{2}$ per cent (as well as all other known costs), you are invited to advise us immediately of the details of the proposed business, the amount of additional capital required, the period over which it will be outstanding and the estimated net profit which will result from its usage. We will then tell you immediately whether you may have the additional amount and for how long.

Interest-free Capital £ Maximum Capital £

A. N. TEAK

During 1970 the units made their normal monthly

returns comparing actual with forecasts for sales, costs, profits, assets employed, etc., and incorporated the interest charge on capital in excess of the interest-free capital. Each month a cumulative operating statement (Table 5) was prepared for Mr Teak. A number of units showed increasing annual returns on interest-free capital, and in most cases units held their capital employed within the maximum capital allowance. A small reduction in the company's bank overdraft was achieved. Mr Teak felt his concept of *interest-free capital* was a good one.

On 10 November 1970 Mr Sawdust requested unit managers to submit their estimates of capital requirements for 1971. In his letter Mr Sawdust gave the following guidance to unit managers:

TABLE 3

Hardwood, Softwood, and Plywood Company

BUDGET FORECASTS FOR THE YEAR ENDING 31 DECEMBER 1970
PROFITABILITY OF UNITS

	Total	Belfast	Bath	Cardiff	Greenock
<i>Sales and transfers</i>					
Softwoods					
Hardwoods					
Plywoods					
Wallboards & Sundries					
Sawing					
<i>Gross Profits</i>					
Softwoods					
Hardwoods					
Plywoods					
Wallboards & Sundries					
Sawing					
<i>Percentage of gross profits on sales and transfers</i>					
<i>Overheads</i>					
Own					
H.O. Service Charges					
Wear and Tear					
Interest at 8 per cent on Excess Assets Usage					
<i>Net Profit</i>					
<i>Interest-free assets</i>					
<i>Annual return of net profit on interest-free assets</i>					

Valuations are being made of the land and buildings occupied at each unit in the Group and the probable result will be the elimination of these assets from the capital employment and a rent charge substituted.

The Group are also considering the leasing of lorries, trailers, cranes, fork lifts, etc., and, as leases are made, capital equipment will be gradually reduced and leasing costs substituted in place of depreciation.

New valuations and leasing, however, are not yet finalised and for 1971 fixed assets should be valued at estimated book value at 31 December 1970 plus 50 per cent of proposed additions in 1971.

In the case of *Stocks* and *Book Debts* three assessments are required:

1. *Minimum*

Consider *separately* the periods when you anticipate stocks and book debts will be at their lowest totals. Assess these amounts and in the case of *stocks* reduce to the most efficient level that could be attained if goods were strictly available according to the varying replacement times of the products concerned.

For the *book debts* valuation, take two-monthly period when sales are anticipated to be at their lowest and assess the book debts as at the end of

TABLE 4

Hardwood, Softwood, and Plywood Company

BUDGET FORECASTS FOR THE YEAR ENDING 31 DECEMBER 1970
ASSET REQUIREMENTS

	Total	Belfast	Bath	Cardiff	Greenock
<i>Minimum</i> (interest-free) Fixed assets Stocks Book-debts and B/R. Import deposit	—	—	—	—	—
<i>Average</i> Fixed assets Stocks Book-debts and B/R Import deposit					
<i>Maximum</i> Fixed assets Stocks Book-debts and B/R Import deposit					
<i>Excess of average usage over minimum (Interest-free)</i>					
<i>Interest cost at 8 per cent p.a.</i>					

this period. Consider the possible make-up of these sales as to whether a proportion may be for cash against documents and the balance on normal credit arrangements. Ignore any extended credit terms and settle at an ideal amount which could be attained if money was more liquid than it is at present.

2. *Average*

Experience will guide you on the average requirements in accordance with the anticipated sales over the year.

3. *Maximum*

Peak periods must be examined for the assessment of these maximum requirements. Take into account some element of stock replacement delay, and in the book debts' computation allow for present-day financial restrictions.

The minimum and maximum asset requirements will be examined at head office as to their feasibility and capability of being financed.

The *minimum* amounts when agreed will be reckoned as the 'hardcore' assets and will carry no interest charge. It will be the base on which net profits will be judged as a percentage.

Assets used in excess of the minimum will be subject to an interest charge – at present 11 per cent per annum. It is important, therefore, that units should recoup interest costs in their gross profit margins.

Import Deposit balances will not form part of the interest-free assets. They will be subject to interest charged monthly in overheads and this cost must be balanced by extra gross profit margins.

TABLE 5

Hardwood, Softwood, and Plywood Company

OPERATING STATEMENT

Months to.....

	Corres. period previous year	Total	Belfast	Bath	Cardiff	Greenock
<i>Sales for month</i>						
<i>Sales to date</i>						
Transfers to other Units						
<i>Total sales and transfers</i>						
<i>Forecast sales and transfers</i>						
<i>Gross profit to date</i>						
<i>Gross percentage on sales and transfers</i>						
<i>Forecast gross profit percentage</i>						
<i>Interest receivable</i>						
<i>Overheads: Own</i>						
H.O. Service Charges						
Wear & Tear						
Interest Charges						
<i>Net trading profit</i>						
Less Group Admin. Costs						
<i>Group net profit</i>						
<i>Interest-free capital</i>						
<i>Annual return on interest-free capital</i>						
<i>Maximum capital allowance</i>						
<i>Capital employed at month-end:</i>						
Fixed Assets						
Stocks & Work-in-Progress						
Book-Debts & Bills Received						
<i>Import Deposit</i>						
<i>Excess C/E over interest-free capital</i>						
<i>Capital chargeable to interest</i>						
<i>Percentage of average book- debts to average 2 months sales</i>						
<i>Book-debts include</i>						
Bills Held						
Discounted						

Questions

1. Do you think Mr Teak's concept of interest-free capital is a good one? Will it (a) achieve a more effective allocation of capital to units and (b) encourage each manager to improve the return on the capital his unit employs? Is there any conflict between (a) and (b):
2. How should the management incentive bonus be calculated? Should it be based on return on interest-free capital?
3. Does Mr Sawdust's letter of 10 November 1970 influence your assessment of the concept of *interest-free capital*?
4. Can the concept of interest-free capital be employed in companies with a high ratio of fixed to current assets?

Book Reviews

Depreciation W. T. Baxter, pp. vi+176 (Sweet & Maxwell Ltd, £3.75)

The creation by accountants of an acceptable body of thought concerning depreciation has always been inhibited by the lack of an intellectual discipline in professional training and the auditor's demand that all figures which have to be verified should as far as possible not be the product of subjective estimates. As a result, the knowledge of most accountants about depreciation is limited to methods of reducing an asset to scrap value from historic cost, and any methods of depreciation not based on historic cost or pages 48 to 63 of Spicer & Pegler are rejected as not being practical. Unfortunately a long period of rising prices has emphasised the fact that these conventional methods of depreciating and valuing fixed assets only give a true representation of economic reality by chance and not by design, and that whether they wish it or not, accountants will have to think in a more open and constructive manner than they have done in the past about this particular subject.

Economics should of course be a natural source of ideas and concepts about depreciation, but although economists have worked long and hard on this subject their effects on accounting practice and educational literature have been negligible. Various reasons can be put forward to explain this failure but certainly one reason that must be advanced is that economists have on the whole failed to refine their proposals sufficiently to convince accountants that they could be valid principles to apply in working conditions.

There thus exists as between Accounting and Economics a gap which will have to be bridged if both disciplines are to make further constructive advances in the subject of depreciation, and one which hopefully will be bridged mainly by accountants. It is for this reason that *Depreciation* by Professor W. T. Baxter is to be welcomed, for it is a book for accountants written by an accountant which fits clearly into this vital area. Published under the auspices of the Research Committee of the Institute of Chartered Accountants in England and Wales, it ought by right to stimulate constructive and thoughtful discussion about depreciation by both practising and academic accountants, and suggest a number of possible lines of

research for the latter.

The basic theme of Professor Baxter's book is that depreciation charges and asset values in accounting information must attempt to match economic reality, that depreciation charges should be the by-product of asset valuation, the latter derived in turn from observable economic facts and expectations, and that having determined the value pattern of an asset then either an existing or specially devised method of depreciation should be used to give a systematic means of expressing it. Clearly the originality of such a theme depends not upon the general proposition but upon the basis of valuation adopted for the assets, and this in turn will determine both the intellectual soundness of what is proposed and the possibility of its being applied in accounting practice. What has been put forward in this work as the basis of valuation to be used is deprival value, which in essence uses the notion that the value to a firm of an asset which it has is usually going to be the costs that ownership postpones or avoids, and that in most circumstances this will equate to an arm's length determined cost of replacing the goods or services that the existing asset provides.

The attractiveness of this deprival value concept lies in the fact that it appears to be acceptable both as an Economic concept and as an Accounting principle, for it would allow accountants to compute asset values without too much reliance upon highly subjective estimates of costs and revenues. In support of this view it is argued very persuasively that the depreciation of an asset is normally reflected in increasing repair and maintenance costs and not in falls in revenue, so that what is required for valuation purposes is the determination of cost patterns, replacement dates and replacement costs, all matters much more amenable to acceptable estimation from past experience and consideration of future circumstances than total cash flows. In addition to avoiding the very real problems of estimating all future cash flows, the approach also gets round the situation where an asset is used jointly with others to generate a single revenue flow.

Because of the importance of determining the probable replacement date of an asset, an opening chapter is devoted to the determination of the optimum

life of an asset and it is here that Professor Baxter sets the stage so that he can argue that depreciation is reflected in outlays and not in receipts. To do this he points out that it is really incorrect to think of an asset having a life in the biological sense, for with sufficient expenditure upon repairs and maintenance it can be made to go on providing *ad infinitum* the goods or services that it does. As a result, an asset's death occurs either because costs exceed revenue or more probably because another asset will give the same goods or services for lower costs. Such reasoning puts the determination of an asset's life back fairly and squarely into the accountant's province and highlights the point, albeit a small one, that traditional accounting texts and much recent work on investment decisions have not dealt adequately with this matter.

Armed with the concept of deprival value and the ideas of patterns of avoidable and postponable expenditure and economically determined asset lives, the book goes on to consider what are the likely patterns that asset values will show as a result of inherent asset characteristics and external factors, and what methods of depreciation can be adopted or devised to reflect the asset value patterns obtained. However, the theme is much expanded to cover the problem of asset revaluation (both up and down) due to inflation and to technological and other 'real' events, with the strongly implied suggestion that depreciation should be reviewed much more frequently by firms as a matter of course if they expect to have currently valid accounting information. This naturally leads on also to questions of depreciation policies to be adopted with particular asset structures and the possible dangers from not dealing with these situations with care.

However, perhaps one of the marked achievements of the book is to deal so well with the difficult problem of cost of capital. Here Professor Baxter does not simply carry out a technical exercise to show how it can be brought into account but shows instead that if it is not brought in, then asset values and depreciation charges will be incorrect and the resulting accounting information misleading. To read Chapter 8, where cost of capital and depreciation are dealt with at some length, and to then look at so-called practical accounting texts on depreciation is to realise just how shallow are the latter because of their failure to be rigorous in applying observable economic facts and behaviour.

Unfortunately the introduction of cost of capital necessitates the use of discounting and annuities with the result that many accountants may well feel (improperly) that this book is not for them, so for this reason it is perhaps as well to emphasise that it does give comfort for the continued use of existing methods of depreciation. By dealing with depreciation as an integral matter of asset valuation and by suggesting

that certain patterns of asset value are likely to appear with some frequency, Professor Baxter is able to conclude that existing methods of computing depreciation charges may well be quite suitable for obtaining the desired pattern of depreciation charges. Thus he is able to demonstrate that the straight line method, the reducing balance method and the sum of the digits method can all fit certain probable asset characteristics. However, he is clearly not saying that the present rather arbitrary or traditional use of depreciation methods can be continued because they may give the correct result, since from what he proposes the choice of method has to be preceded by more than the ascertainment of asset cost, expected life and scrap value, an exercise which may in fact require the accountant to devise a special depreciation method to cover a particular case.

An interesting if unfortunate implication of what Professor Baxter writes on this question is that the efforts of the Accounting Standards Steering Committee of the three Institutes to limit the depreciation methods used to a selected one or two is a move in the wrong direction and one which must be put down to a failure to recognise that accounting methods are not a substitute for accounting theory.

It would be improper to suggest that this book can be easily comprehended or fully digested upon short acquaintance, for many of the approaches used in discussion and argument require a very open mind to be properly followed, and the number of matters put forward to consideration are so many that it is difficult to fit them into a co-ordinated pattern in a short time. However, apart from the intrinsic merit of the work which one expects time to establish, there is the immediate value of the thought and discussion that it should generate, as the ideas it puts forward are examined in detail and tested for validity and consistency. Depreciation is not a simple matter as accountants have found to their cost, so any worthwhile work dealing with it is likely to be complex, but as Professor Baxter has demonstrated such work can be imaginative while maintaining contact with reality.

D. Brown

Analytical Management, T. W. McRae,
Wiley-Interscience,

London, 1970, 580 pp., £7.00.

McRae, an experienced post-experience programme teacher, has tackled the very difficult task of introducing the practising manager to a wide range of quantitative techniques which have proved useful to decision takers. His aim is to explain the benefits and limitations of quantitative techniques rather than to provide operational competence in their use. His task is very difficult because practising managers are a

highly heterogeneous body, and throughout McRae has to make assumptions about the reader's existing knowledge. The result is that one manager may find the pace of the explanation too fast, while another may find the book elementary. Some may wish more case illustrations, others a more theoretical approach.

After briefly explaining in Chapter 1 what management science is, the book is divided into five parts: Some Basic Concepts, Information Processing, Problem Solving, Foretelling the Future, and Control. The ability of a practising manager to absorb the basic concepts introduced in Part 1 will be highly dependent on his existing knowledge. Some chapters, such as the one dealing with the measurement of economic variables, have little depth and are written in a 'chatty' style: others are far more demanding. A manager with no previous exposure to statistics will find Chapter 4, Quantifying Risk, very heavy going. In 28 pages McRae deals with frequency distributions, theoretical probability distributions, dispersion, variance and standard deviation, Poisson and Binomial distributions; probability and decision trees, and expected values.

Part 2 is concerned with McRae's own specialism information processing. The coverage is comprehensive, but the writing style rather mechanical with few practical examples. The practising manager will probably find this part rather dull, particularly if he has had limited contact with computers. However, those managers requiring a concise introduction to computers, programming, and management information systems will not be disappointed. At the end of each chapter of the book McRae includes a useful set of review questions with answers. He also provides a set of revision problems but no solutions. The practising manager reading this book in his spare time will probably find the omission of solutions particularly disconcerting. Experience of teaching executives leaves the impression that they like revision problems provided subsequently they receive solutions. This deficiency is very relevant to Part 3, in which the contribution of management science to solving some of what McRae describes as 'the classical management problems' is examined.

While the chapters on Break-Even and Contribution Analysis, Critical Path, Linear Programming, and Monte Carlo Simulation are adequate, some of the other chapters in Part 3 are less satisfactory. The pricing problem is discussed in isolation from other variables in the marketing mix, the discussion is theoretical with no case examples, no distinction is made between different pricing situations, and there is a tendency to assume a one product firm. There is a sharp contrast between the limited view of pricing taken by McRae and the Centre for Business Research,

Manchester Business School, Pricing Check List, which is reproduced as an Appendix. The chapter explaining discounted cash flow techniques does not adequately distinguish between the Internal Rate of Return and Net Present Value approaches. Of course, it is always easy to criticise a book of this type, but the fact remains that it is very dangerous when writing for practising managers (a) to confuse and (b) not to relate theory to practice.

Part 4 consists of one chapter on Budgeting and Demand Prediction. The first part of the chapter examines some accounting aspects of budgeting and explains how it leads to budgetary control. A mechanistic approach to budgeting is taken with no consideration of the behavioural aspects, and some statements are made which might confuse the practising manager. For example, it is stated that, in practice, there are two budgets, the physical budget and the cash budget. 'The physical budget attempts to estimate for a future period the number of items which will be sold and physical resources to produce this quantity of sales. The cash budget reduces the physical budget to cash terms and attempts to measure the cash shortage or surplus at various points of time during the period.' No mention is made of the master budget or of profit! In the second part of this chapter the problems of demand analysis are examined, and some simple methods of extrapolating and detecting short-term trends. The title of the final part of the book is Control, and it contains chapters on the allocation and recovery of indirect cost, job and process costing, and standard costing. While these chapters are quite adequate, and every practising manager should be familiar with their content, the title of Control for this part of the book is not an ideal one. Cost Accounting would appear to be a more appropriate title.

Compared with McRae's previous books, *Analytical Management* is disappointing. It is not a book that I would recommend to practising managers, particularly at a price of £7.00.

John Sizer

The Private Company Today

A. J. Merrett and M. E. Lehr

Gower Press Ltd, 1971, viii + 74 pp., £2.50

This book, commissioned by a group of directors of leading private companies, is concerned with the present role and future survival of the private companies in the United Kingdom. The authors claim that private companies and businesses make a large and special contribution to the U.K. economy but that the current trend of tax legislation, if continued unchanged, will ultimately eliminate all private business of any significant size. They therefore propose a

new tax policy, the main element of which is the replacement of estate duties by a gifts tax.

The authors show themselves well aware of all the problems involved in measuring profitability and return on investment and of making comparisons among companies and industries. They nevertheless feel able to conclude that the large private company is more 'efficient' than the public company since it has higher rates of return on total assets in eleven out of

fifteen industry groups.

They find no practicable basis on which the performance of the smaller private enterprise can be compared with public companies, but claim (without producing a great deal of evidence) that private companies are essential to the maintenance of free competition, that they are important innovators, and they are more efficient in small fragmented markets.

R. H. Parker

Contributors to Accounting and Business Research

Volume 1 No 3 Summer 1971

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Editorial

THIS fourth number of *Accounting and Business Research* completes the first volume. These early issues have necessarily been to some extent experimental, and the procedures and standards followed so far need not be regarded as rigid or permanent. As was said in the first issue, no journal attempting to break new ground can be produced within a set formula. Nevertheless the first stage of the experiment has been sufficiently successful to ensure continuance on the present lines.

The number of subscribers has increased steadily and is now over 3,500, which for a journal in this field is very encouraging. Requests for back issues and reprints of particular articles, always a sign that a publication is having the right kind of impact, are steadily increasing.

The second year of *Accounting and Business Research*, therefore, begins in an atmosphere of confidence. The flow of material for publication is steadily growing. The limits to the field to be covered within the very general terms of the title of the journal are wide. The maintenance of a high level of quality remains the major consideration.

The only change planned for the second volume is minor. Editorials, which have been regularly included in the first issues, have only been intended to cover the introduction of the project. From now on they will only appear when special considerations call for them. One further change cannot be deliberately planned, but it will certainly be encouraged and welcomed. This is the submission of research material directly from business.

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Developing Dividend and Financing Policies with a Computer Terminal

D. J. Chambers, H. S. Singhal, B. D. Taylor and D. L. Wright

Introduction

Financial applications in which the computer has so far made the greatest impact have typically been ones where its capacity to store lots of data and its economy in performing routine arithmetic operations have been crucial. This paper describes work now in progress at the London Business School on problems of financial planning, in which the role of the computer is being extended from preparation of financial projections to tracing the implications of alternative financing policies and where its crucial advantage lies in the ability to perform not merely arithmetic but also *logical* operations. Specifically, different financing and dividend policies have been combined in a computer programme, together with straightforward routines for making financial projections. The financing policy is expressed in an explicit statement of the conditions under which finance will be raised from different sources; the computer compares values and key ratios generated within the programme itself to find which conditions are satisfied. A dividend policy is written similarly as a logical statement of the critical values for particular variables (e.g. earnings, rate of increase in earnings, etc.), critical in the sense that a particular dividend will be paid if the variable falls within a specified range. The computer calculates values of the key variables, identifies the relevant conditions and prints out the stream of projected dividends conforming to the policy.

This approach to strategic planning does not rely on the capacity to store very large quantities of data. It is possible, therefore, to employ a system in which a terminal is linked directly to a comparatively small and cheap computer, allowing managers to experiment with alternative policies and projections. The advantages of such immediate communication 'on-line' with a computer are particularly significant in applications like these to problems of strategic choice, where typically there is no single criterion for ranking outcomes and the reinforcement the manager most

needs is some efficient means to explore, alter and compare a wide range of alternatives. With direct access to a computer, it becomes possible to link together the selection of investments, sources of finance and the payment of dividends as one joint problem, and hence to identify interactions between separate elements in the firm's strategic plan which are not apparent when each part is considered in succession.

The approach described below was first developed from inside two small-to-medium sized companies with the co-operation of financial managers. More recently it has been used in reverse, to project company results from the outside under alternative sets of assumptions.

Financing policies

In developing the approach, a number of alternative financing policies were identified with the help of financial managers, and one of these is illustrated in the flow chart of Figure 1. This is the policy where managers plan to find any necessary funds in a period first by using any excess cash or short-term investments, then by increasing overdraft, and then if necessary by issuing long-term debt. Calling on the sources of funds in this sequence would be appropriate where, e.g. bank debt is cheaper than long-term debt or where long-term rates are expected to fall.

Within such a policy, there can be many different limits on overdraft. Two limits are used in the examples which follow: (i) a requirement that current ratio be maintained at not less than a specified value (which places an implied upper limit on the current liability 'bank overdraft'); (ii) a simple upper bound, like the 'line of credit' familiar in the US.

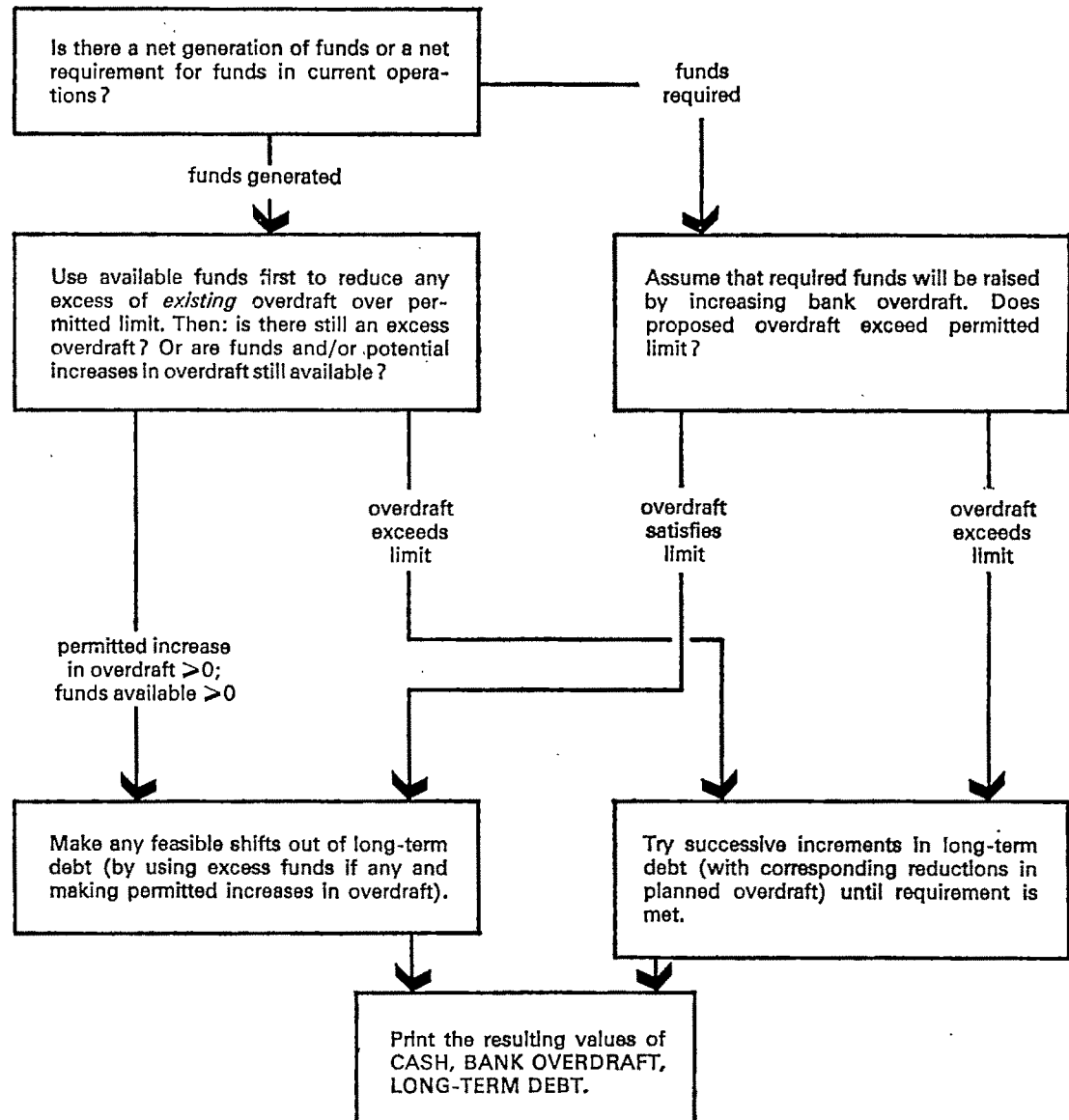
Long-term debt is allowed to rise only in substantial increments or tranches, and excess funds may be used to reduce long-term debt (again in fixed tranches).

Different versions of this policy are stated by specifying values for the required current ratio, the fixed upper limit on overdraft, and the unit size of tranches.

Figure 1

Financing policy type A*

The programme starts by calculating the net current flow of funds over one period, from all transactions other than financing. The upper limit on permitted bank overdraft is also calculated, from the specified requirement on current ratio. A financial structure for the end of the period is then developed as follows:



* Values of the following parameters are specified by the manager in selecting a particular financing policy:

- (1) Lower limit on ratio of current assets to current liabilities (as imposed by lending banks).
- (2) Upper limit on bank overdraft (a separate requirement from (1)).
- (3) 'Policy' limit below which reported cash balances must not fall.
- (4) Size of the tranche by which (or in multiples of which) long-term debt may be increased.
- (5) Size of the tranche by which (or in multiples of which) long-term debt may be reduced.

Other financing policies have been analysed in much the same way, but need not be illustrated here: e.g. a policy appropriate to cases where long-term debt is cheaper than money borrowed from the bank, so that funding of debt occurs whenever possible. Further cases have been programmed where successive increments in long-term debt must be separated by a specified interval of time.

Dividend policies

Two different statements of firms' dividend policy are given below. The form of these statements is fairly typical of those we have encountered while the numbers used are illustrative.

Dividend policy 1

The target is a cumulative growth of 10 per cent per annum in dividend per share, subject to constraints relating dividend to current earnings, as follows:

There is a 10 per cent growth in dividend per share if this is consistent with a dividend cover of at least 2.¹

If this dividend cover will not be achieved, dividend is held or cut. It is held at the previous year's value if cover is at least 1. Otherwise dividend is cut by enough to keep cover equal to 1.

¹ Earnings cover is here defined as the amount available for distribution to shareholders, divided by the dividend that is actually distributed.

Dividend policy 2

The dividend paid in any year is related to the last dividend paid and the earnings in the current year:

If the last dividend is less than one third of current earnings, then this year's dividend is increased by (say) 10 per cent over the last one.

If it is more than one third but less than one half of current earnings, then the dividend is maintained.

If it is more than one half of current earnings, then the latter amount is paid as dividend.

The logic of each of these policies can be stated (and programmed) very conveniently if three parameters are specified: two critical values for Dividend Cover, C_H and C_L where the subscripts mean 'high' or 'low', and the target growth rate of dividends, G . The possibilities are shown in Figure 2.

Dividend policy 1 is then expressed by setting C_H , C_L and G at the values (2.0, 1.0, 10 per cent) respectively. For Dividend policy 2 the parameters take the values (2.73, 2.0, 10 per cent).² The examples therefore illustrate two versions of the same policy, differ-

² Note that Policy 2 was expressed in terms of last year's dividend, while the general statement relates earnings to this year's dividend. The condition for dividend increase by 10 per cent under Policy 2 can be written as:

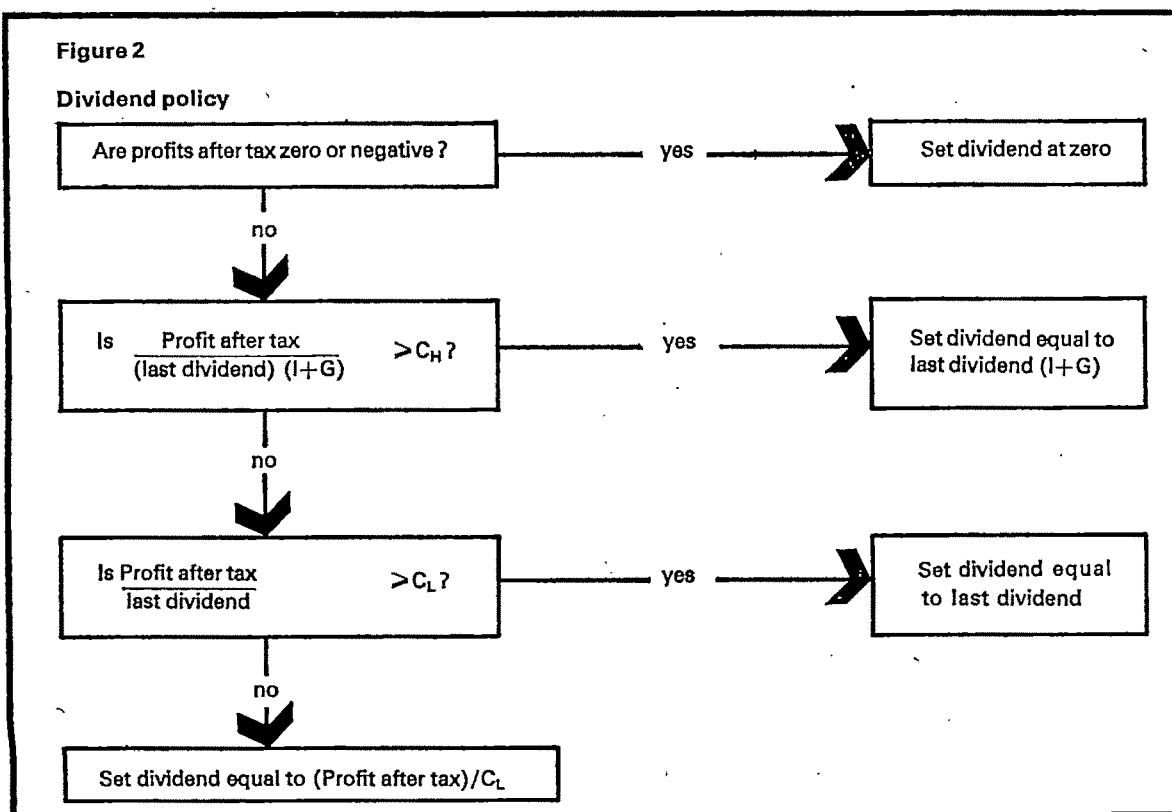
$$E_t > 3 D_{t-1}$$

But if $D_t = 1.1(D_{t-1})$ this becomes

$$E_t > 3 D_t / 1.1$$

$$> 2.73 D_t$$

where D_t and E_t represent dividend and earnings of year t



ing only in the values of the three parameters.

Most of the other dividend policies which have been described to us can be represented by increasing the number of critical values for Dividend Cover beyond the pair used above. Another very simple policy, illustrated in the examples which follow, takes the form: 'Cut dividend to $\frac{1}{2}x$ and hold it at that rate for y years.'

Numerical examples

In these examples two dividend policies and two financing policies will be considered, and the financial consequences of adding a significant new project will be projected over three years. The initial balance sheet of Firm X at the end of 1971 is given in Figure 3. Financing and dividend policies are as follows:

Financing policy 1: as in Figure 1, with current ratio >1.75 .

Financing policy 2: as in Figure 1, with current ratio >1.50 .

(In both cases, the fixed upper limit on overdraft is £400,000.)

Dividend policy A: as in Figure 2, with $C_H=3$, $C_L=2$, $G=20$ per cent.

Dividend policy B: 'cut dividend to £50,000 and hold it there for three years'.

Figure 3	
Firm X: Balance sheet 31 December 1971	
	(£'000)
Assets	
Current assets	
Cash	221
Debtors	878
Stock, work in progress	925
Others	
Total	2,024
Less current liabilities	
Creditors	675
Tax payable	70
Bank overdraft	250
Dividend payable	74
Others	
Total	1,069
Net current assets	955
Add fixed assets	
Land and buildings	1,168
Plant and machinery	188
Others	
Total net assets	2,311
Liabilities	
Share capital	937
Reserves	672
Long-term debt	600
Deferred liabilities	102
Total	2,311

Varying dividend policy and financing policy

Consider first the effects of varying the financing policy while dividend policy (and the use of funds) remains constant. Cases (A) and (B) of Table 1 differ in the lower limits imposed on current ratio, and as this limit is raised the firm's freedom to employ increases in bank overdraft as a source of funds is correspondingly curtailed. In case (A) the critical restriction on overdraft consists of the fixed upper bound of £400,000. Case (B) requires a higher current ratio than does (A), and current ratio proves to be the critical restriction on bank overdraft in this case. The tighter restriction on overdraft in (B) forces the firm to raise £100,000 in long-term debt in 1973, and gearing rises to 0.31 in 1974 as against the 0.28 of (A).

Next consider an illustration of the effects of varying dividend policy with an unchanged financing policy. The dividend policy of (B) leads in fact in this case to a dividend held at £74,000, since the conditions for an increase at the target rate are not satisfied. In contrast, case (C) requires 1972's dividend to be cut from the previous year's value, to £50,000; and this value is to be maintained for the two years following. This reduction in planned dividend affects the financial projections in two ways. Firstly, the lower dividend means lower current liabilities (specifically a lower 'dividend payable') and this provides room for a bigger overdraft: the limit rises from £338,000 to £362,000. Secondly, the larger retention means that less new debt has to be issued. As a result, 1974's requirements can be met out of overdraft, in case (C), without issuing further long-term debt. The gearing ratio is correspondingly reduced.

The timing of a major investment

Table 2 illustrates a routine use of programmes of this type. It shows the effect on financial performance of adding one further project whose scale is significant in relation to the firm's existing activities. Assume that accepting this project is consistent with the firm's long-term marketing strategy and that it meets the required standards for estimated DCF return. What will be the impact on reported financial results for 1972-4?

If the investment occurs in 1972, the estimated direct effects on 1973 and 1974 accounts are as follows: this information is entered as a modification to the earlier data.

	1973	1974
Increase in sales	700	700
Increase in fixed costs	150	150
Increase in asset book value	110	

For this illustration, the same figures are moved one year forward if the investment is undertaken in 1973.

Table 1

Financial projections under alternative dividend and financing policies

Dividend and financing policies*	(A) Div. policy (1); CR > 1.50			(B) Div. policy (1); CR > 1.75			(C) Div. policy (2); CR > 1.75		
	1972	1973	1974	1972	1973	1974	1972	1973	1974
Financial projections									
Overdraft limit (£'000)	400	400	400	339	338	338	363	362	362
Actual overdraft (£'000)	327	395	398	327	295	298	327	271	348
Long-term debt (£'000)	700	700	800	700	800	900	700	800	800
Gearing ratio	0.28	0.27	0.28	0.28	0.29	0.31	0.28	0.29	0.28
Current ratio	1.77	1.67	1.67	1.77	1.81	1.81	1.80	1.89	1.77
Dividend payable (£'000)	74	74	74	74	74	74	50	50	50

* Dividend policy (1): as in Fig. (2) with $G=0.2$, $C_H=3$, $C_L=2$.
 Dividend policy (2): 'cut dividend to £50,000 and hold it at that value'.
 CR: Current ratio.

Table 2

Effects of a further investment, with alternative starting dates

	(B) No extra investment			(D) Investment in 1972			(E) Investment in 1973		
	1972	1973	1974	1972	1973	1974	1972	1973	1974
Funds required (£'000)	198	68	103	308	—17	—75	198	178	22
Profit after tax (£'000)	252	221	174	244	362	270	252	214	307
Return on net assets	0.10	0.08	0.06	0.09	0.12	0.09	0.10	0.07	0.10
Earnings per share	0.10	0.09	0.07	0.10	0.14	0.11	0.10	0.09	0.12
Dividend payable (£'000)	74	74	74	74	89	89	74	74	89

Alternative data can be accepted with equal ease.

Secondary effects are calculated within the programme: e.g. inventories, debtors and creditors are all tied to sales.

In Table 2, dividend and financing policies are maintained as in case (B) above, and performance is compared with and without the major investment. It appears that the investment will be effective in reversing the downward trend in profits and in earnings per share over these three years. If it is undertaken at the later date, 1973, profits and return on net assets for that year will both be marginally lower than they would be without the investment. Both values will peak in 1973 if the project is undertaken at the earlier date.

The investment also makes it possible to satisfy the conditions for an increase in dividend at the target rate of 20 per cent, either in 1973 or 1974.

The financing of this investment is illustrated in Table 3. Funds for the initial outlay are obtained in both of the cases illustrated by issuing an extra £100,000 in long-term debt and by an increase of £10,000 in bank overdraft. The behaviour of the gearing ratio matches the time at which this new finance is raised. For an investment in 1972 the ratio starts at a relatively high value and declines over the three years, while for an investment in 1973, gearing will peak in 1973.

Results like those of Tables 2 and 3 can provide managers with useful supplementary information for investment appraisal; alternatively they can be developed by outside analysts to project forward the implications of current policies. An obvious extension is to re-run the cases under alternative dividend and financing policies. The main reason for developing this

Table 3

The financing of a further investment, with alternative starting dates

	(B) No extra investment			(D) Investment in 1972			(E) Investment in 1973		
	1972	1973	1974	1972	1973	1974	1972	1973	1974
<i>Financial projections</i>									
Overdraft limit (£'000)	339	338	338	339	380	285	339	338	375
Actual overdraft (£'000)	327	295	298	337	320	248	327	305	328
Long-term debt (£'000)	700	800	900	800	800	800	700	900	900
Gearing ratio	0.28	0.29	0.31	0.31	0.28	0.26	0.23	0.32	0.30
Current ratio	1.77	1.81	1.81	1.75	1.83	1.80	1.77	1.80	1.81

programme for an on-line system, with direct access from a terminal to a central computer, has been to provide the means for experimenting in this way with different combinations of dividend and financing policies and investment opportunities.

Organising a computing system for strategic planning

The key problem in developing and using approaches like this one is to decide to what extent to aggregate the data on which the programme operates. One could develop comprehensive programmes to reproduce and manipulate the whole of a firm's system of financial information, which will provide the means for detailed recording and control as well as for strategic planning.³ At the other extreme there are many strategic issues which an experienced analyst can resolve with back-of-envelope projections using aggregated data in the broad categories employed in published accounts. The approach described here is perhaps best viewed as an elaboration of back-of-envelope projection, and the case for using a computer in this role is quite separate from the question of whether or not to use one for recording and processing routine accounting information.

It has been our experience that the main investment of time in developing a useful system of this kind comes from managers and financial experts rather than from computer specialists. The primary task is to develop a set of worksheets to intermediate between an existing accounting system and the computer programme, using categories which will allow the consequences of different strategies to be isolated. When such a system is being used, much of the work takes

place outside the computer, in re-arranging or changing the information on a worksheet and hence in providing new summary data on which the programme will operate.

Computer programmes for projecting forward a set of accounts are now fairly common and this aspect of the system need not be presented in detail. There are, however, two features of its design which are characteristic of any system built for planning rather than for data processing and recording, and which should, therefore, be emphasised. First, at what stage does the computer accept data from the existing accounting system? This question arises particularly in the treatment of sales and cost data. Second, how much detail should be included in the routines for projecting forward asset values?

In our present system, budgeted sales and the corresponding direct and indirect costs, as developed by the existing accounting procedures (with or without a computer) are taken as inputs.

Assets are grouped in a limited number of categories (ten in the current version), where a single 'category' contains all those assets which are depreciated at (approximately) the same rate, i.e. its depreciation rate is the defining characteristic of a category. The total written-down book value of assets in each category at the starting date is supplied to the computer, together with projected purchases and disposals in each year up to the planning horizon.⁴

The corresponding data for the written-down tax values at the starting date and for planned purchases

³ For example, see G. W. Gershefski (1969): Building a Corporate Financial Model. *Harvard Business Review*, July-August. M. R. Tyran (1971): A computerised Decision-Simulator Model. *Management Accounting*, March.

⁴ The most useful projections to be made with this system are those running up to three or four years ahead and over this span there is a strong case for treating all assets as depreciating on the basis of a declining balance. For assets which are in fact on a straight line basis, the present programme makes the approximation of choosing a rate of declining balance to produce the same written-down book value halfway through the asset's remaining life.

and disposals are also supplied to the computer, and the programme calculates book and tax value in each category for each reporting date up to the horizon.⁵

Projects which are still under consideration are described on individual worksheets, using the same categories as in the basic projections for their effects on sales, costs and assets.

The programme is so arranged that the user, at a computer terminal, can try alternative values for direct cost, tax rates, interest rates on debt and ratios of stocks, debtors and creditors to sales for any accounting period.

The most important change of direction which we have made while developing this work has been in the treatment of new equity. In principle this can be handled in much the same way as increments in long-term debt: the flow chart is revised to show the circumstances under which management will issue new shares. Such conditions for expanding the share issue were written into the earlier versions of our financing policies. In practice it is not easy for managers to write an exhaustive statement of policy on new equity taking into account such factors as share price and market expectations. By contrast, with an on-line computing system it is a simple matter to increase the equity and run the programme again if, for example, the first results show an unreasonably high gearing ratio. For these reasons we currently favour planning the issue of equity, and weighing up the factors affecting its volume and timing, outside the computer programme.

Relation to optimisation methods

This paper has described the current status of one of two connected approaches, now being developed at the London Business School, to the control problem of

treating investment, financing and dividend decisions simultaneously. Other work in formulating this approach has been described by Packer⁶ and by Judge and Melville.⁷

As described in the present paper, the manager himself specifies feasible policy combinations and then decides what disposition of results (as provided by the computer) he prefers. The computer calculates for each combination a merit-rating which is stated in more than one dimension: e.g. 'profit in 1972' 'return on assets in 1974', 'earnings per share in 1973', etc., and in the process of searching for better combinations the manager has to formulate his preferences between outcomes each of which has many dimensions.

The parallel development has been in extending optimisation methods (viz. DCF appraisal, and modelling by linear programming) to deal simultaneously with investment, financing and dividend policy.

This complementary approach starts with limits which must be satisfied by particular indices of financial performance (e.g. 'reported earnings must exceed £1.5 million') and uses the computer to explore all the feasible combinations of investment, financing and dividend policy, using a single merit-rating. Current applications of this work are presented by Chambers.^{8, 9} Together, the two approaches offer reasonable grounds for believing that the computer can now be used operationally for the simultaneous analysis of investment, financing and dividend decisions.

⁶ J. J. L. Packer (1971): The Projection of Financial Results. *Long-Range Planning* 3, 3.

⁷ F. C. Judge and M. R. Melville (1970): Computer-assisted Financial Policy and Planning. *London Business School, Sloan Programme Paper*.

⁸ D. J. Chambers (1971): The Joint Problem of Investment and Financing. *Operational Research Quarterly* 22, 3.

⁹ D. J. Chambers (1971): Dividend Plans and Balance Sheet Management. *London Business School Working Paper*.

⁵ Since tax depreciation rates do not in general coincide with book rates a separate classification into up to ten categories is maintained for calculation of tax.

Dilution and Counter-Dilution in Reporting for Deferred Equity

Charles A. Tritschler

1. The issues in financial reporting for deferred equity

'Deferred equity' securities, a broad class of financial instruments including convertible debentures and preferred stock, warrants, rights, options and issues subject to stipulated conditions, involve the firm in 'contingent'¹ contractual commitments to issue common stock. Under 'generally accepted accounting principles' (GAAP), deferred equity has been reported until recently on a strictly legal basis. Widening use of such instruments with their complex implications for financial reporting has thrown into question the adequacy of this form of disclosure. The Accounting Principles Board (APB) of the American Institute of Certified Public Accountants (AICPA) has dealt in increasing detail with this issue in Opinions 9, 10, 12, 14 and 15.²

The several modifications of the APB position in these opinions indicate controversial elements of measurements are involved in these ambiguous

financing instruments. Cogent criticisms of the latest AICPA Opinion, 15, have been numerous but most of them only document the alternatives and dissenting views already advanced in the text of the Opinion itself – and rejected by the Accounting Principles Board.³ As in split Supreme Court rulings, a critic of the AICPA Opinion need look no further than the text of the decision itself for opposing arguments. However, these APB Opinions have been oriented more to how the earnings per share (EPS) is to be measured, rather than to what the underlying problem of accounting theory is.

Primary attention to the highlighted statistics, EPS, has resulted in a widespread, but restrictive definition of dilution as the reduction of EPS attributable to increases in common shares outstanding. This definition emphasises that periodic trends in the total amount of net income are not proportionately reflected in EPS, if accompanied by increases in common shares outstanding.⁴ If the popular assumption is held that share valuation is a function of changes in reported EPS,⁵

Note to United Kingdom Readers

Though prohibition of repurchase of common shares by companies in the United Kingdom eliminates the actual implementation of counter-dilutive reductions of equity outstanding, the normative concept of dilution presented in this paper still lends insight in the UK legal context. This analysis also raises the issue of the advisability of prohibiting flexibility in adaptation of financial structure by repurchase of common shares. Review of the *pro* and *con* of the laws governing repurchase of shares appears a timely topic in the UK.

¹ This broad usage of the term should be distinguished from issues of stock 'contingent' on certain earnings levels or market valuations involved in acquisition agreements.

² AICPA, Opinion 9, 'Reporting the Results of Operations', December, 1966; Opinion 10, 'Omnibus Opinion-1966', December 1966; Opinion 12, 'Omnibus Opinion-1967', December 1967; Opinion 14, 'Accounting for Convertible Debt and Debt Issued With Stock Purchase Warrants', March 1969; Opinion 15, 'Earnings per Share',

May 1969. To limit the length of this paper, the author must assume the reader is acquainted with GAAP and the issues raised in measuring EPS and accounting for deferred equity.

³ See Werner G. Frank, Jerry J. Weygand, 'Convertible Debt and Earnings per Share: Pragmatism vs. Good Theory', *Accounting Review*, Vol. XLV, No. 2, April 1970, pp. 280-9.

⁴ APB Opinion 15 motivates its prescription for reporting EPS, by saying such calculations 'assist the investor in weighing the significance of a corporation's current net income and of changes in its net income from period to period in relation to the shares he holds or may acquire', p. 217.

⁵ The assumption that share valuation is some function of EPS is prevalent, yet empirical validation of a working model is generally recognised to remain lacking. See Henry G. Manne, Editor, *Economic Policy and the Regulation of Corporate Securities*, Washington, DC: American Enterprise Institute for Public Research, 1969, especially George J. Benston, 'The Effectiveness and Effects of the SEC's Accounting Disclosure Requirements', pp. 23-79.

then the timing of inclusion in reported EPS of contingent issues of common stock is of some concern to the investor. Thus, the issue becomes whether (and, if so, how) the 'primary' EPS reported should reflect common stock equivalents for contingent issues of stock prior to the date of legal issue in order to anticipate EPS reductions (dilution) explicitly.⁶ Opinions 9 and 15 of the APB dealt with establishing tests for common stock equivalents (CSE) which anticipate unrealised increases in common shares outstanding on a strictly legal basis.

The potential impact on EPS of outstanding commitments to issue additional shares deserve disclosure, but issuance takes place only in response to other significant conditions such as increases in share valuation, net income or dividend payout. If common stock equivalents (CSE) are calculated and included with legal common stock outstanding for primary EPS, this departure from a strictly legal EPS (L) based on shares outstanding should be verifiable by the dilution of equity reported on an articulated balance sheet. The precedents of GAAP indicate primary EPS should be measured from historical data on financing decisions by past or present management. Management policy originating in past contractual commitments and continuing in current decisions to leave deferred equity securities on the market may cause dilution of equity. Ex post evaluation of this element of management performance should be measured from historical data rather than from some prediction of future legal EPS (L).

Since EPS is itself an articulated statistic (net income to common divided by the number of shares of common equity), revision of legal EPS should be based on historical dilution of equity as measured by the principles of asset and equity valuation and of income determination used in the accounting statements. Both in theory and in practice, EPS under the AICPA Opinion 15 method is criticised as obscure in purpose and as low in predictive significance.⁷ The aim of this paper is not to evaluate AICPA Opinion 15 as such but rather to reach a basic definition of dilution relevant to investment decisions and measurable within the constraints of historical reporting under GAAP. Full disclosure of deferred equity poses a significant challenge to financial reporting.

⁶ Opinion 15 says 'a convertible security should be considered as a common stock equivalent at time of issuance if, based on its market price, it has a cash yield of less than 66⅔ per cent of the then current bank prime interest rate', p. 229, in calculating primary EPS. Other deferred equities are classified by the treasury stock method, pp. 230-3, described in detail in this paper. For fully diluted EPS (D) all deferred equities are assumed to be common stock equivalents with adjustments for disposition of proceeds on exercise, pp. 234-5.

2. Definition and Disclosure of Dilution from Deferred Equity

An insight into the controversy over deferred equity can be found in the definition of dilution implemented in AICPA Opinion 15 and in the prevailing perceptions:

Dilution (Dilutive). A reduction in earnings per share resulting from the assumption that convertible securities have been converted or that options and warrants have been exercised or other shares have been issued upon the fulfilment of certain conditions.⁸

To identify 'dilution' and its adverse connotations with a reduction of EPS attributable to issuance of stock involves an uncertain inference about the relative effect of equity financing. While some stock transaction is necessary for dilution of equity, an increase in the number of common shares is not a sufficient condition for defining the resulting reduction in EPS as dilutive. By that definition even the issue of shares at enormous premiums would be dilutive, to argue by counter-example. The semantic effect is to reinforce the opprobrium already attaching to reductions in EPS. Certainly 'dilution of EPS' has become a synonym for 'reduction of EPS' in common usage, but not without blurring the precision in the meaning of 'dilution' in analysis.

Another established usage of the term dilution is as a failure to maintain proportionate share of ownership in the absence of the exercise of preemptive rights. Measurement of *dilution of share of ownership* is a simpler facet of the concept which would be facilitated by the disclosure to be recommended in this paper. A general definition of dilution to compare with that in Opinion 15 is found in Kohler's dictionary:

Dilution. Relative loss or weakening of equity position.⁹ The financing transaction which weakens the stockholder's position is dilutive of his equity. The scope of financial reporting does not now encompass projecting the effect of stock issue pricing or capital structure, yet the ultimate motivation behind measuring dilution involves such questions. Measurement of prospective dilution must be recognised as an extremely speculative undertaking, however important it might be to investors. By contrast, historical financial reporting does require a feasible and objective methodology for the more limited objective of defining the capital structure matching the period then ended.

A. Dilution of equity: definition and measurement.
As distinguished from the limited definition of dilution

⁷ Eldon Hendriksen, *Accounting Theory, Revised Edition*, Homewood: Irwin, 1970, p. 553.

⁸ APB Opinion 15, p. 274.

⁹ Eric L. Kohler, *A Dictionary for Accountants, Fourth Edition*, Englewood Cliffs: Prentice-Hall, 1970, p. 160.

oriented to EPS, a theoretical unity is achieved by going back to the general definition based on valuation. An authoritative investment text states, 'The *value of a common stock* is said to be diluted if there is an increase in the number of shares without a corresponding increase in assets and earning power.'¹⁰ Moreover, while measurement of dilution of value of a common stock could be based on accounting *book* value per share (again, there is some precedent for this definition), book value per share rarely has any meaningful relationship to market value or 'assets and earning power' per share.

The relative loss of equity position or dilution of equity can best be defined theoretically and operationally as *lack of parity of proceeds from issue with the market value per share of common stock*. Definition of dilution as lack of parity of market value per share before and after issue of stock is free of theoretical defects, whereas parity of book EPS or book value per share before and after issue is not.¹¹ The effect on EPS, attributable to proceeds of issue invested in operations, is generated only after some gestation period and book net assets per share represents neither market nor liquidation value. The only dilution criterion measurable at date of issue of common stock is lack of parity of the proceeds with the *ex ante* market value per share and thus with the present value of future earnings to which it articulates. To be sure, future earnings from the new capital may not be high enough to support the current level of market price, but estimates of future profitability are definitely not now within the scope of GAAP.

However many additional equity shares are issued, dilution of wealth cannot occur if the additional equity is obtained for the current market value of the existing shares. Issues of common stock are in many cases floated in amounts, which materially increase the denominator for EPS calculations. If such issues of

stock were not thought to be in the best interests of stockholders, in spite of resulting short-term reductions in EPS, no new issues would be made. It is precisely the function of the market mechanism to appraise historical data in relation to future prospects of earnings and to complementary financial structure changes. The question for financial reporting is how best to summarise historical results with a minimum of bias toward one or another uncertain future condition.¹²

B. Asset and equity valuation

The economic outcomes of financing are realised over time, period by period, as reported on the income statement and matching balance sheets. The peculiar problem of deferred equity is that exchanges of cash and obligations spread uncertainly across multiple periods and may realise positive, neutral, and negative effects at separate points in time by provisions of the contract:

(1) Anti-dilutive Exchange: The corporation receives cash for convertibles with a reduction in senior charge or for warrants with no dividend requirement in return for option privileges exercisable at a later date. Adverse events may eliminate the anti-dilutive benefits of senior securities.

(2) Counter-dilutive Exchange: The corporation may later receive cash under the options previously granted and issue common shares of commensurate current market value in partial fulfilment of the

¹² Market parity tests for common stock equivalents are considered in AICPA Opinion 15, p. 259, and in H. Bierman, Jr. and B. Liu, 'The Computation of Earnings Per Share', *Accounting Review*, January 1968, pp. 62-7. In the latter, deferred equities are defined as common stock equivalents in the proportion market value of common bears to pertinent exercise (conversion) values and income to common stock is adjusted accordingly.

This method stands with the *pro forma* category and generates a primary EPS which does not articulate with the reported financial statements. When market value of common exceeds exercise value, *pro forma* treatment of deferred equity as common stock equivalent is surely pertinent to investor interpretations of EPS. The graduated adjustment prevents trigger reclassifications of common stock equivalents and reversals thereof with movements of common stock market value.

However, market-exercise parity is far from a necessary and sufficient condition for assurance of eventual issue of the common stock or its imminence, especially for options and warrants. Moreover, the Bierman-Liu test is exceedingly conservative, since the major proportion of all common stock issuable under deferred equity securities would be treated as common stock equivalents at time of issue and thereafter. Market/Exercise (conversion) price ratios are set near to parity at time of issue and catastrophic drops in market price would be necessary to reduce the *pro forma* CSE to a low proportion of the total issuable. Many conceivable conditions could keep deferred equity overhanging just by maintaining for it some marginal advantage over the equivalent common stock.

¹⁰ Benjamin Graham; David L. Dodd; Sidney Cottle, *Security Analysis, Fourth Edition*, New York and San Francisco: McGraw-Hill Book Company, 1962, p. 615. Emphasis added. Also note discussion of an antecedent to calculation of common stock equivalents for warrants in terms of market values on pp. 227-8 and 660-61.

¹¹ Innumerable measurement problems exist in estimating the market prices at which common shares could be repurchased. Transactions costs, tax effects, the perceived intent of management and the market factors resulting in an increasing marginal cost function all would contribute to effective market prices higher than the observed transactions. See E. J. Elton and M. J. Gruber, 'The Effect of Share Repurchases on the Value of the Firm', *Journal of Finance*, March 1968, pp. 135-49. Offsetting the understated market price of repurchase is the overstated proceeds based on the exercise price, which reflects none of the costs of floating a new issue. Moreover, under the favourable conditions necessary for conversion or exercise, actual repurchase should not be necessary and only the principle is in question.

option privilege. Such a transaction is in and of itself neutral in effect on equity in terms of the current conditions.

(3) Dilutive Exchange: The corporation receives no cash and issues additional shares in fulfilment of the option privilege as the incentive for the prior anti-dilutive exchange.

On a *realised* basis each exchange is recorded as transacted. On an *unrealised* basis, the question of the accrual of asset and obligation arises. While the disclosure of the counter-dilutive exchange is useful, the more important issue is the treatment of the dilutive exchange and the point at which it should be recognised on the books. The same theoretical criteria as apply for recognising a loss in asset value apply to recognising an increase in liability value. The liability to issue the incentive equity emerges and is measurable at the time when market price of the common rises above the option exercise price. At a minimum the liability is to issue the shares of equity and should be so stated in common stock equivalents until legal issue is realised.

At a more controversial level the liability can be stated in dollars of equity capital and be created by charging retained earnings to capitalise the unrealised issue of stock at its market value. Capitalisation of the issue of deferred equity at market value on a realised basis has precedent in literature but is a separable issue, not within the scope of this paper.¹³

The unrealised dilution attributed to deferred equity by this theory should not be interpreted as its cumulative dilution (or anti-dilution, if successful) but the incremental dilution realisable during the current period. No precedent exists under GAAP for *explicitly* measuring and reporting the dilution (and anti-dilution) attributable to a financing vehicle even as realised and certainly not cumulatively. The anti-dilutive benefit of reduced senior charges due to the associated conversion privilege or the benefit of capital derived from original sale of warrants are realised and already impeded in the pertinent accounts. As a result, these prior realised anti-dilutive benefits do not enter into measuring the unrealised dilutive effects of issuing deferred equity.

The contractual terms of deferred equity issues define an unrealised transaction and a valuation for the contingent issue of common stock. At present, disclosure for such transactions is provided by parenthetical display of the authorised shares reserved for such issues on the balance sheet with a footnote describing the terms. Because this contingent increment in residual equity can be summarised by the

dollar amount of proceeds, its disclosure can meaningfully be comprehended within the balance sheet by the account, 'Contingent Common Stock Subscribed'.¹⁴ This account places the deferred equity within the articulated valuation accounts rather than merely in a parenthetical disclosure 'short', as the number of shares reserved for issue is in current practice.¹⁵

The equity account established for the contingent commitment to issue stock is matched by explicit valuation of the corresponding asset, 'Contingent Stock Subscriptions Receivable', a contra equity account. Its historical dollar valuation is definite by terms of the same deferred equity contract, which prescribes the proceeds due upon legal issue of the common stock. Offset against one another, these complementary accounts reduce the transaction to its zero net monetary effect, while providing full disclosure of the contract. The familiar accounting device of the contra account acts as a valuation mechanism. Measurement of CSE is achieved by recognition that an historical asset, stock subscriptions receivable, has a current market equivalent of the number of common shares which its contractual dollar proceeds could currently purchase on the market. As a resource, these proceeds may be allocated to the counter-dilutive repurchase of common stock (treasury stock assumption, in the original, but incomplete conception of Opinion 15).¹⁶ The historical cost of this potential corporate asset should be related to its current market equivalent in common shares.

The discount from current market value of the proceeds due on issue of common stock under deferred equity contracts, which the corporation is allowing the deferred equity investors, represents the dilution of prior outstanding common equity. The number of common shares at market value, which are equivalent to this discount currently available to deferred equity investors, constitute the common stock equivalents for primary EPS calculations. To the extent there is lack of parity of proceeds from issue with market value of common stock, the corporation is allowing dilution of equity. Such dilution may be justified by the additional capital raised or senior charges reduced as a result, but

¹⁴ Changes in terms over time present complications, but Opinion 15 provides reasonable conventions. See pp. 247-50.

¹⁵ The stock subscription concept for disclosure of warrants has been suggested by William Schwartz, 'Warrants - A Form of Equity Capital', *Financial Analysts Journal*, Sept-Oct 1970, pp. 87-101.

¹⁶ See *American Home Products Annual Report*, 1969. The dilutive effect on EPS of the \$2.00 convertible preferred stock has been partially offset by treasury common stock. At 31 December 1969, 3,186,078 common shares were issuable and 2,484,644 shares were held as treasury stock.

¹³ See Welach, Zlatkovich and White, *Intermediate Accounting*, Homewood: Irwin, 1968, pp. 687-9 and reference therein.

these advantages to date are already taken into account and the offsetting disadvantage should be recognised when and if indicated by objective market evidence.

Though unrealised, the rules of conservatism and of full disclosure require reporting this change in valuation of the contingent stock subscription asset measured as its current value in common stock equivalents. Most deferred equities are issued with the stock subscription receivable at a premium in CSE, which is anti-dilutive. Only when a discount emerges with dilutive effect should the CSE enter into EPS calculations as in AICPA Opinion 15. Again, there is a degree of approximation and certain conventions that go into determination of market value per share (average for the period).

C. Historical income measurement under GAAP maintained for primary EPS(S)

Under the stock subscription method the stockholders' equity section of the balance provides full disclosure of the deferred equity overhang and the basis for determining common stock equivalents to calculate primary EPS(S). At the same time no *pro forma* alteration of the net income to common is necessary for EPS(S). Since there is no reclassification of debt or preferred stock as common stock, no parallel adjustment of senior charges is necessary. Since proceeds from exercise are entirely devoted to counter-dilutive repurchase of common stock, no adjustments of financial income and expense are necessary. Unlike AICPA Opinion 15, this theoretical structure need place no limit on the possibility of repurchase of common stock issuable under deferred equity except that of the proceeds available to do so.

The reduction in EPS(S) for dilution represents the earnings reallocated to shares issuable without contribution of capital equal to the current present value of those earnings as measured by the market. Upon legal issue of deferred equity this reduction of EPS is commingled with that reduction attributable to the issue of shares for which the market value contribution of capital is received. The periodic reduction of EPS by new legal issues of common at market value represents a necessary report of events, which accounting theory has never suggested should be anticipated or smoothed out. The reduction of EPS for the total issue of common stock reflects two causal factors, the increase in shares issued at market value and the increase in shares issued as the incentive previously contracted under the deferred equity. The balance sheet equity accounts then aggregate these financing transactions and carry them forward along with the innumerable others standing on the books in the degree

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of detail considered adequate disclosure by accountants.¹⁷

In summary, since the corporate financial structure is dependent on the market values of its common stock by the terms of deferred equity contracts entered into by the corporation with investors, those market values otherwise excluded from the accounts become relevant to the corporate entity because of the contract and measurable because of their verifiability by objective evidence.

3. Mathematical model of dilution as a function of historical variables

In order to determine what dilution net of the counter-dilutive stock subscription account would be, a mathematical model of its measurement should be formulated. A distinct advantage of this method is that such a formulation is deterministic and expresses either the EPS(S) or equity dilution as a function of only two variables. The sensitivity of percentage dilution to changes in these variables can then be examined to project its impact on reporting and the validity of the disclosure relative to the underlying conditions.

Mathematical expression of EPS (15) dilution following AICPA Opinion 15 involves adjusting both the net income and common shares in many different ways. Opinion 15 lacks both the simplicity and the generality to be useful. In spite of its stated pragmatic objectives, the AICPA method is both complex and predictive so that accountants would have to undertake massive empirical research even to identify its consequences.¹⁸

The following formulation is drawn up in relative terms to eliminate corporate earnings as a variable. Each ratio employed below must be precisely defined and interpreted. (The fractions represented are later discussed in the percentage form more familiar in investment analysis.) The dominant mathematical result is:

Dilution of each class of deferred equity and of EPS can be expressed in relative terms of the current market discount available to the deferred equity and

¹⁷ See P. H. Knutson, 'Income Distribution: the Key to Earnings Per Share', *Accounting Review*, January 1970, pp. 55-68, for a proposal to distinguish the process of income determination and distribution. This concept has a distinguished theoretical lineage, but represents a broader critique of GAAP than is attempted in this paper.

¹⁸ The following derivation of EPS dilution (based on ex post observation of verifiable historical evidence) should be contrasted with statistical research necessary to justify the ex ante classification of convertibles as CSE by predictive test at original issuance under Opinion 15. There, the varying proportionate effects of income adjustments (for the senior charges eliminated or for the proceeds from exercise invested) block projections of EPS dilution with any degree of generality.

of the overhang of common shares issuable on exercise (conversion).

The more precisely expressed equations below enable a corporation with a particular overhang of deferred equity to project what its EPS(S) dilution will be at various levels of common share market price relative to the prices stipulated for issue. An investor can do the same. Definitions and derivations follow.

A. Relationship of contractual provisions, market prices, common stock equivalents and percentage dilution under the counterdilutive stock subscription model.

Definition of Terms—Variables in relative terms are in lower case.

For Specific Class of Deferred Equity (Subscripted).

C_1 = Exercise (conversion or option) price at which common is to be issued.

$c_1 = C_1/C_1 = 1$. Express C_1 , the exercise price, relative to itself.

M_1 = Market price of common at average for the period.

$m_1 = M_1/C_1$. Express M_1 as market price relative to C_1 .

$\Delta m_1 = m_1 - c_1 = (M_1 - C_1)/C_1$. Express increase in market price relative to exercise price, usually termed 'premium' in financial publications.

$\Delta m_1/m_1 = (M_1 - C_1)/M_1$. Express market discount of exercise price below parity relative to current market price, where $M > c_1$.

R_1 = Number of common shares reserved for issue as deferred equity.

$\Delta n_1 = R_1/N$. Express quantity common shares reserved for deferred equity relative to common shares outstanding.

S_1 = Number of common stock equivalents imputed to specific deferred equity for calculation of EPS(S).

$s_1 = S_1/N$. Number of common stock equivalents for specific deferred equity relative to common shares outstanding.

For All Classes of Deferred Equity

N = Number of common shares outstanding prior to issue of deferred equity.

$n = 1$. Express N as common share quantity-relative base.

k

$S = \sum S_1$. k = Number of classes of deferred equity, where $m > c_1$. Sum the S_1 .

k

$s = \sum s_1$. Sum the s_1 on relative basis.

E = Earnings to common for current period.

$d = (EPS(L) - EPS(S))/EPS(L)$. Relative dilution of EPS(S), as prescribed by stock subscription model, to EPS(L) based on legal outstanding shares.

$$(1) S_1 = R_1 - R_1 C_1 / M, \text{ if } M > C_1.$$

Derive CSE as exercisable shares minus shares repurchasable with proceeds for specific deferred equity from stock subscription method.¹⁰

$$(2) s = [(RM - RC)/M]/N \\ = \frac{R(M - C)/M}{N}$$

Assume only one deferred equity, $S = s$, to simplify without summation. Eliminate subscripts. Express CSE as fraction of legal shares outstanding.

$$(3) s = \Delta n(m - c)/m = \Delta n \Delta m/m, \text{ if } \Delta m > 0.$$

Reformulate on relative basis. Divide by C .

$$(4) s = \Delta n \frac{\Delta m}{1 + \Delta m}.$$

Since $m = \Delta m + c$ and $c = 1$, m can be eliminated to express CSE dilution.

$$(5) d = \left[\frac{E}{N} - \frac{E}{S + N} \right] / \frac{E}{N}.$$

Formulate $d = [EPS(L) - EPS(S)]/EPS(L)$ for total deferred equity to express overall EPS dilution.

$$(6) d = 1 - 1/(1 + S/N) \\ = 1 - 1/(1 + s).$$

Note E drops out of computation under this formulation.

$$(7) d = s/(1 + s).$$

Simplify to one issue of deferred equity.

$$(8) d = \frac{\Delta m}{m} \Delta n / (1 + \frac{\Delta m}{m} \Delta n).$$

Substitute equation (3) for s to express the EPS dilution attributable to deferred equity.

Illustration of Calculating Dilutive Effects

$$(i) \text{ Assume } \Delta n = .33; \Delta m = 1; m = \Delta m + c = 1 + 1 = 2$$

¹⁰ The Opinion 15 treasury stock method also corresponds to this formula. CSE are computed 'as if the options and warrants were exercised . . . and the funds obtained thereby were used to purchase common stock at the average market price during the period', p. 230.

$$d = \frac{1}{2} \cdot \frac{.33}{(1 + \frac{1}{2} \cdot .33)} = .166 / 1.166 = .143$$

$$= 14.3\% \text{ Dilution}$$

(ii) Assume $\Delta n = 1$; $\Delta m = .33$; $m = \Delta m + c = .33 + 1$
 $= 1.33$

$$d = \frac{.33}{1.33} \cdot \frac{1}{(1 + \frac{.33}{1.33})} = .25 / 1.25 = .2$$

$$= 20\% \text{ Dilution}$$

Even if the reader does not agree that the stock subscription or counter-dilution method should be the sole criterion for determining primary EPS dilution, this derivation provides a useful analysis of the 'treasury stock method' applied to warrants and options in AICPA Opinion 15. In general, dilution can be formulated in a familiar mathematical function to determine its limit as CSE increase. d has 1 as a limit, as s goes to infinity.

$$(9) \quad \lim_{s \rightarrow \infty} \frac{s}{1+s} = 1,$$

$$\text{where } s = \frac{\Delta m}{m} \Delta n, (3); \text{ and } d = \frac{s}{1+s}, (7).$$

Thus, if $s = 1$ (that is, common stock equivalents under the stock subscription model equal legal shares) then EPS dilution is 50 per cent, and so forth. Similarly, s from (4) exhibits a definite pattern:

$$(10) \quad \lim_{\Delta m \rightarrow \infty} \frac{\Delta m}{1 + \Delta m} \Delta n = \Delta n,$$

$$\text{where } \frac{\Delta m}{1 + \Delta m} \Delta n = s.$$

The limit of s is Δn as Δm goes to infinity.

The maximum CSE must be the number of shares overhanging, but only if market price of the common goes to infinity. As a result, increases in CSE and d are more responsive to increases in Δn than Δm , since increases in Δn are not dampened by inclusion in both numerator and denominator as increases in Δm are.

After rearranging the terms, it is evident that the counter-dilutive stock subscription method measures a fraction dilution of EPS(S), which is equal to the fraction dilution of stockholders' wealth measured by the counterdilutive market test:

$$(11) \quad d = \frac{\Delta m \Delta n}{m + \Delta m \Delta n}, \text{ if } \Delta m > 0.$$

$$= \frac{\Delta m \Delta n}{1 + \Delta m + \Delta m \Delta n}$$

Reinterpret equation (8) in terms of dilution

of market valuation per share by algebraic simplification.

Here the numerator represents the stockholder wealth drawn off by the deferred equity at a discount from market price. The denominator represents the wealth of the legal common shareholder if it were allocated the increased proceeds attributable to issue of the overhang of the deferred equity at current market price instead of exercise price. The quotient represents the discount realisable by the deferred equity investor. The usefulness of the counter-dilutive stock repurchase measurement of percentage dilution of EPS(S) is that it is consistent with that for dilution of stockholder wealth.

In this formulation, it becomes apparent that percentage dilution of wealth is computed on an expanding base, as the market price of the common increases. The percentage dilution of shareholder wealth attributable to deferred equity is dampened by the prerequisite of an increase in market price for all stockholders in order for the market price equivalent of the deferred equity to increase. This mathematical relationship does not prevent one class of investor benefiting or suffering relative to another from the financing terms entered into by the corporation. However, the deferred equity contract is based on increases in market price of the common; the new stockholder does not gain until all do.

B. Impact of the counter-dilutive stock subscription method on reporting EPS(S)

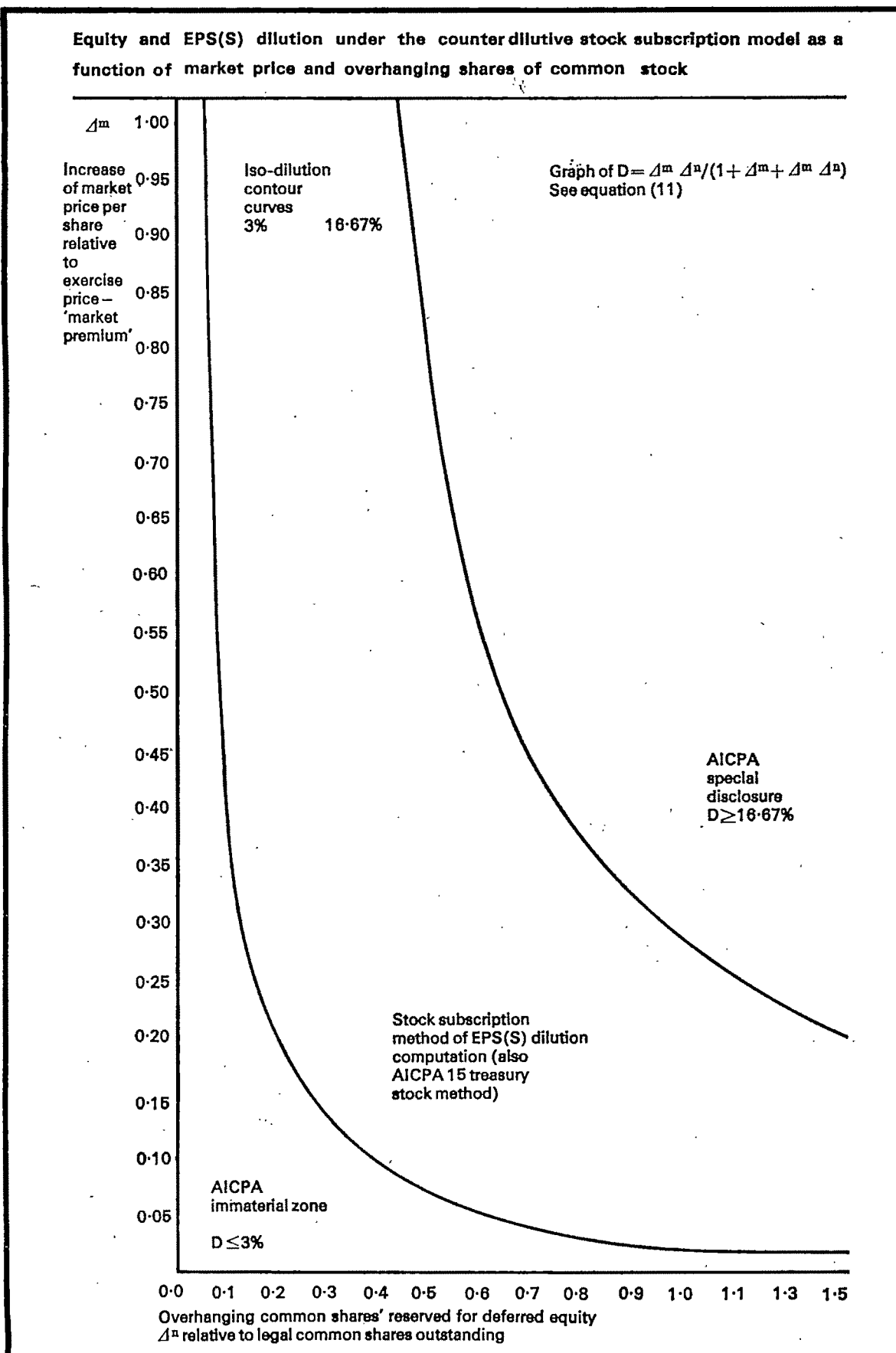
The generalised model of EPS dilution on the stock subscription basis can be presented graphically to show its interrelationships with the two key financial variables, Δn , the relative increase in common shares attributable to deferred equity issues and Δm , the relative excess of market price over conversion (or exercise) price of common.²⁰ A particular level of D , dilution of EPS(S), can be traced to these combinations of the two independent variables which generate such dilution under the formulations presented above. See Figure 1.

The empirical evidence of the range of percentage common shares reserved for deferred equity to shares outstanding (Δn) used by corporations in their financial structure has been surveyed to determine representative values for analysis. The average dilution of common shares outstanding (not EPS) for companies with deferred equity runs about 10 per cent.

²⁰ The formula for dilution requires the relative discount available to the deferred equity, which can be calculated from the 'premium' variable. That is, the discount is $\Delta m / (1 + \Delta m)$.

FIGURE 1

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Glen Alden is an example of extreme dilution at 88.5 per cent in 1967.²¹ As for Δm , one source estimates conversion takes place when the excess of market price over conversion price reaches about 20 per cent.²² The level at which options and warrants are exercised is much more uncertain. Corporations commonly cannot force exercise as expeditiously as they can conversion, though terms vary.

AICPA Opinion 15 has defined the range of material dilution under which it considers the treasury stock method common equivalents to be applicable for warrants and options: overall dilution must exceed 3 per cent and warrant-option dilution cannot exceed 16.67 per cent.²³ Of course, public reporting must be primarily oriented to reporting fully the exceptional case, but if these levels of the variables are representative, the stock subscription method does not generate 'material' (by AICPA Opinion 15) dilution of EPS in the run of the mill case. See Figure 1. The materiality limits of EPS(S) dilution are not exceeded,

if $\Delta n = 5$ per cent and $\Delta m < 161.78$ per cent,

if $\Delta n = 10$ per cent and $\Delta m < 44.72$ per cent,

if $\Delta n = 15$ per cent and $\Delta m < 25.95$ per cent,

if $\Delta n = 20$ per cent and $\Delta m < 18.27$ per cent,

if $\Delta n = 30$ per cent and $\Delta m < 11.48$ per cent.

The 'average' corporation with 10 per cent share dilution (Δn) could allow its common stock's increase of market over conversion (exercise) price (Δm) to rise quite substantially, nearly 45 per cent, without a 'material' dilution of EPS and equity.²⁴

Fully disclosed, the future commitments to issue common stock in a complex financial structure may not be misleading to the investor but rather make explicit the prospective expansion of capital necessary to finance any growing corporation. The periodic dampening of increases of EPS, which would eventually result from the periodic issues of additional common stock, are only implicit in simple financial structures. Thus, the absence of contingent commitments to issue common stock may be the source of even more liberal and illusory extrapolations of EPS

growth than their presence, however complex an analytical problem they force upon managers and investors. The use of deferred equity reduces uncertainty as to prospective changes in financing by limiting and defining the options and can aid in investment analysis. Deferred equity has acceptance in capitalising earnings prospects and hedging financial structure. It is fair to say the objective of accounting should be full disclosure and not penalising the use of deferred equity instruments by unfavourable reporting effects.

4. Summary: equity dilution in financial reporting

Attesting to the legal EPS calculation represents a response by auditors to the demand for more measurements useful to investors. However, attesting to EPS dilution represents a substantial enlargement of this heretofore routine computation to encompass unrealised events. To oppose such an enlargement would be neither responsive nor forward looking, since the pressure to expand the attest function is intense and conducive to advancing accounting's contributions to economic welfare. The problem is to maintain logical and valid enlargements, which are compatible with the existing structure of theory and which do not have unintended consequences and encourage treating predictive data as historical data.

Drawing on a device employed in APB Opinion 15 for reporting on warrants and options, this paper's recommendation would expand and theoretically reorient the 'treasury stock method' to determining the common stock equivalents of all types of deferred equity securities for primary EPS reports. The counter-dilutive effect of the proceeds of deferred equity would be reinterpreted from the *pro forma* treasury stock asset to the 'historical' common stock subscriptions receivable asset (contra equity). Any lack of parity of the counter-dilutive proceeds from contingent stock subscriptions receivable with the current market value of the common stock to be issued constitutes dilution. The common stock equivalents of

²¹ Lerner and Auster report that for companies reporting diluted EPS in 1967 on the compustat tape, average dilution of *shares outstanding* was 9 per cent for 164 companies. See Eugene M. Lerner and Rolf Auster, 'Does the Market Discount Potential Dilution', *Financial Analysts Journal*, July-August 1969, pp. 118-21. Ronald Lease in research at Purdue University analysed the Compustat data and found 262 companies reporting deferred equity in 1968 with average dilution of *shares outstanding* of 10.31 per cent.

²² The market price at which conversion takes place by call or forced conversion as a function of the common dividend to convertible interest ratio is a management decision, once market price exceeds the conversion price. Empirically, conversions have taken place at roughly a 20 per cent premium of market over conversion price. See Eugene F. Brigham, 'An Analysis of Convertible Deben-

tures', *The Journal of Finance*, March 1966, pp. 35-54.

²³ Any dilution over 16.67 per cent is figured in a more conservative way with income from proceeds of exercise not already applied under the treasury stock method added to earnings and those additional shares issuable treated as common stock equivalents. See AICPA Opinion 15, pp. 221 and 232. Note that applying treasury stock method to 20 per cent of outstanding shares results in 16.67 per cent dilution.

²⁴ Those firms which exceed 16.67 per cent dilution treat the excess under AICPA Opinion 15 by the 'as if stock issued and proceeds invested', EPS (15) dilution measurement, a more hypothetical disclosure. To illustrate the conditions under which this switch takes place, note these requirements: if $\Delta n = 40$ per cent and $\Delta m > 100$ per cent; if $\Delta n = 70$ per cent and $\Delta m > 40$ per cent; if $\Delta n = 120$ per cent and $\Delta m > 20$ per cent. See Figure 1.

the discount from market available to the deferred security holder measures the extent of the dilution of the existing stockholder's equity at the current date. The CSE should then be added to legal shares issued for computation of the primary EPS reported.

The accounting theory behind this paper shows that this device has implicit in it the GAAP principles of asset and equity valuation, income determination, and their articulation, which would return the reporting of equity and primary earnings per share (EPS) to GAAP fundamentals and to an historical, not *pro forma* basis. In conjunction with a *pro forma* maximum equity EPS, whereby all deferred equity is treated as CSE without

assumption of counter-dilutive repurchases of stock but with *pro forma* adjustment of income, the recommendations here would provide more explicit, intuitively comprehended accounting disclosure.

Historical accounting avoids predictive, 'trigger' criteria with significant announcement effects based on unverified statistical relationships, such as are impeded in the AICPA Opinion 15 test for dilution from overhanging convertibles. The current low level of the market (1970) is a timely and ironic reminder that classifications of deferred equity at time of issue in prediction of ultimate disposition can be of varying reliability.

Objectivity and the Accounting Profession

M. J. Mumford

'An important feature of the historical cost basis of preparing annual accounts is that it reduces to a minimum the extent to which the accounts can be affected by the personal opinion of those responsible for them'.¹

This well-known quotation from the *Recommendations on Accounting Principles* of the Institute of Chartered Accountants in England and Wales exemplifies the importance attached by the accounting profession as a whole to the need for published information to be 'objective', that is to say as free as possible from 'personal opinion'. The purpose of this article is to discuss what interpretations may be put upon the meaning of the word 'objective' in the context, not in order to discover a single absolutely valid definition of the word, but in order to consider what ideas it may convey to different people.

We can start by reminding ourselves just how difficult it is to decide upon what income really is. (It is perhaps even more difficult to define capital.) There is an unlimited number of ways in which to define and measure income, ranging from 'cash received', to Professor J. R. Hicks' widely quoted definition of income as 'the maximum value which a man can consume during a week, and still expect to be as well off at the end of the week as he was at the beginning'.² It seems to me eminently reasonable to believe that different measures are appropriate for different purposes; which implies the problem of deciding which measure might be best for any particular purpose. However, even if we can agree quite definitely on one measure we are likely to find that it involves some degree of personal opinion (for example, on how much

ought to be provided for 'depreciation of fixed assets').

Why should we be concerned to minimise the 'extent to which the accounts can be affected by the personal opinion of those responsible for them'? Is it because a statement, even by an expert, is never of value if it is merely his personal opinion – even if we are certain that he is completely honest? Or is it because of the risk that the opinion will not be honest, i.e. unbiased? Or is it simply that statements on the basis of opinion may differ even between experts, making it impossible to know how to interpret them or to rely upon them? There is some justification for each of these doubts. The easiest way to discuss the problem would seem to be to put forward five possible definitions of the term 'objectivity', and then to consider how far each covers some aspect of the problem:

- (i) Objectivity means verifiability by means of evidence existing independently of the observer.
- (ii) Objectivity means general acceptance by competent authorities.
- (iii) Objectivity means statistical reliability. This means that an observation is objective if there is a high probability that any other measurement of the same data (by any person of equal expertise) would result in the same conclusions.
- (iv) Objectivity means freedom from bias. This definition concentrates more on the state of mind of the observer than on the measurement he produces.
- (v) Objectivity means consistency with the objective of the measurement.

Considering each of these in turn, the first will strike as familiar anyone who is acquainted with the standard textbooks on auditing. Although it is not usually discussed at any length in these books, objectivity as a virtue is implicit from beginning to end, and consists of a heavy reliance upon verification of revenue statements and balance sheets by means of

¹ Institute of Chartered Accountants in England and Wales; *Recommendations on Accounting Principles*: Recommendation N.15, para. 2. (Issued in London, 30 May 1952.)

² J. R. Hicks; *Value and Capital* (2nd ed.): Oxford University Press, London (1948) at chapter 14, p. 172.

appropriate documentary evidence. Reliance upon 'external' evidence clearly constitutes a valuable definition of objectivity, but it is to some people unduly narrow. It is certainly true that much of our conventional system is not objective in this sense.

The second definition is certainly a great deal broader, and seems to be implied in the heavy reliance placed by professional bodies upon statements of 'recognised' principles and 'generally accepted' practices. It really amounts to saying that what is objective is what is accepted by convention as being objective. It implies that a measure of personal opinion may well exist, but that every expert involved will conform to the agreed standards. The problem arises, of course, that several different results can be obtained by the use of different accounting measures all of which are 'generally accepted'. Each of these measures is individually 'objective' under this definition; yet the problem remains of how to select the appropriate one for the purpose in hand.

A recent argument of the case between definitions (i) and (ii) is made by R. F. Salmonson.³

'In (some) views of objectivity, accounting data exist independently of the accountant and his measurement process. While this may be appropriate for certain measurements (for example, the closing market price of a security on a given date on a given exchange), other measurements (such as the annual net income of an entity), cannot be obtained independently of the accountant's measurement and judgement processes. Objectivity is therefore more realistically defined as a consensus among observers, not based on the existence of factors external to and independent of those who perceive them.'

The objection which seems to me to weaken this definition is that it does not require that bias should be excluded as a necessary condition for objectivity. Indeed, 'general acceptance by competent authorities' can mean that information is positively misleading as long as every authority adheres to the conventional procedure. (It can be argued that the conventional regard for conservatism in annual accounts is misleading for many purposes in just this way.)

The third definition concentrates on a different aspect of the problem. What matters, according to this view, is not whether the information is verifiable, or whether it is biased, but whether or not it can be relied upon as a basis for prediction and hence for decision making. This view tends to be that of the economist (indeed, it is associated particularly with the name Milton Friedman, Professor of Economics at the University of Chicago). There is a great deal of

sense in the argument. After all, if all knowledge is to some extent uncertain (and nobody can be completely sure even that his sensory perception is infallible) then what matters is not so much whether a statement can be said to be 'true' as whether it can be relied upon as if it were true. A measure of income could be frankly wrong without the fact mattering as long as every decision made on the basis of the information was exactly the same as would have been the case with the right information.

The objections of this line of argument are fairly evident. We can accept that errors do not matter much if they are fairly obvious, and their influence can be estimated reliably. The problem is that without verifiability and without confidence that bias does not exist, we can never be sure that one measure is incorrect to the same degree as another, or even that it is incorrect in the same aspects. If we know that all the figures in a particular set are overstated by 100 it is simple to allow for this. If we know that the figures are all overstated by a given percentage this also need cause little trouble. But if we have reason to believe that some figures have been 'adjusted' whilst others have not, we require to know which ones have (and by how much) in order to rely upon the data. What we may be able to do is to examine the data to see if we can identify any recognisable pattern which indicates the bias which has been introduced; there are difficulties here, however – not least being the possibility that the bias itself cannot be relied upon not to alter in its effects as time goes by.

The fourth definition is less concerned with the results than with the mental attitude of the observer. For an observation to be unbiased it is necessary that every single possible interpretation be given an equal chance to be considered and accepted. Bias arises as the result of prior learning on the part of the observer. To be entirely free of bias would require complete absence of prior knowledge of any of the relevant information. In the absence of this, the best hope is that the observer will consciously eliminate prior conceptions as far as he can, and as far as it prejudices his view of the data.

As a practical matter, however, this process can clearly only be carried out to a limited extent; the observer will exclude bias to the extent necessary for the purposes of the observation. This requires a knowledge of these purposes.

Thus we arrive at the fifth definition. Objectivity has been stretched in meaning, perhaps beyond its powers. 'Consistency with objectives' suggests integrity as much as objectivity. Paul E. Fertig has written that: 'The purpose of objectivity in accounting is to assure the user of accounting statements that the statements are unbiased, and although verifiability of

³ R. F. Salmonson; *Basic Financial Accounting Theory*: Wadsworth Publishing Co Inc, Belmont, California (1969), at p. 59.

evidence in support of accounting measurements is necessary, it is not sufficient to provide this assurance. That is, *bias can be introduced into accounting statements by the use of inappropriate measurement methods, judged in the light of accounting objectives*, as well as by the 'use of evidence having an insufficient degree of verifiability'.⁴ This quite clearly means that discretion has to be used in selecting data and measurement methods, and that the exercise of that discretion will depend upon the purposes for which the information is intended. Objectivity is thus in part at least a matter of the appropriateness of the measure for the job in hand.

There is an interesting comment on the passage quoted from Dr Fertig, made by Peter Firmin in the same set of discussion papers. Firmin writes: 'Fertig urges accountants to be more responsive when users (of "better" information) make their demands known. In our opinion, Fertig's conception of accounting is anachronistic. As we have suggested elsewhere, the accountant – because he should occupy a key role in the design and implementation of the firm's information system – often is in an even better position than the user to know what output of information is "useful".'⁵ What this criticism does is to transfer my expression 'consistency with objectives' away from the objectives of the measurer and towards the objectives of the *users* of the information.

It is the task of accountants to make measurements on behalf of their clients and employers. This task is 'objective' to the extent that the accountant selects his measurement tools with a view to the information

needs implied by the stated objectives of his clients. The client may well not know what information is available or relevant, but the accountant must attempt to exclude any personal opinions or preferences of his own from the jobs of identifying his client's objectives and supplying the most valuable and relevant data. It will be of the greatest value if the information not only is unbiased, but can clearly be seen to be unbiased. This is where the advantage of 'externally verifiable' evidence becomes obvious.

There remains the considerable problem of defining the objectives of the client. This may or may not be a practical possibility, but in any case if we want as broad a definition of objectivity as the fifth, we must accept the need for judgement not only in the selection of data, and in the choice of measurement methods and interpretation of results, but also in the identification of the real objectives.⁶

We are accustomed to using historical cost as a basis for income measurement, augmented by certain conventions (e.g. conservatism), largely on the grounds of objectivity. It is certainly never maintained that this measure is entirely free from personal judgement. On the other hand, if the broadest definition of objectivity is adopted (the fifth definition) then a number of alternative measures may come within the bounds of acceptability. Thus accounts based on historical cost continue to be important for the purposes of 'stewardship' in its narrowest sense – i.e. as a check that assets are not being stolen or mislaid. But for the purposes of deciding upon the efficient allocation of capital, current market prices (buying or selling) are likely to be far more appropriate, and, by the fifth definition above, no less objective.

⁴ Paul E. Fertig; *Current Values & Index Numbers: The Problem of objectivity* (essay in R. K. Jaedicke, Ijiri, and Neilson (editors); *Research in Accounting Measurement*: American Accounting Association (1966), at p. 137.

⁵ Peter A. Firmin; Discussion Comments in *Research in Accounting Measurement* (see (4) above), at p. 166.

⁶ See, for example, the views expressed in: Morton Backer; *Accounting Theory and Multiple Reporting Objectives* (essay in Morton Backer (editor), *Modern Accounting Theory*): Prentice-Hall Inc, Englewood Cliffs, NJ (1966).

The Role of the Auditor in Modern Society: An Exploratory Essay

David Flint

It is now 75 years since the memorable and much quoted remark of Lord Justice Lopes in the Kingston Cotton Mill¹ case: 'An auditor is not bound to be a detective . . . he is a watchdog, but not a bloodhound.'

Whatever may have been the case in 1896 the inherent philosophy of such an approach is entirely irrelevant to the needs of today. It is passive and protective with some hint of reserved power to be brought into play if sufficiently provoked. What is needed in auditing is something dynamic, a critical, penetrating, enquiring attitude of mind, and a deep conviction of a vital social purpose. In some respects this last aspect is the most important. The practice of auditing cannot evolve satisfactorily in a changing world if it is not conceived and exercised in the context of a social philosophy of audit and accountability.

There is an urgent need for clearer understanding of what that social philosophy is because at the present time the audit function is under challenge. Auditors for what they conceive to be their duty and for how they discharge that duty are under even greater public challenge. This is a matter which is serious and fundamental. The public are right to question and to challenge. Matters of public interest are at issue. It fails to measure up to the problem, or to appreciate the nature of the challenge, for auditors to retreat behind the defence that the public really do not understand what auditors do or for what they take responsibility; or for auditors to deplore the ignorance and intolerance of the public in the context of the growing volume and size of claims for damages and the prospect of criminal prosecution for negligence.

There may indeed be a need for better communication, better understanding, better public relations and some institutional action should be taken to deal with this. However, the really critical social issue is what should be the concern of the modern audit. What is the role of the auditor in modern society? Is

the present responsibility – however onerous – the right one in the context of the society of the 1970s and prospectively of the last quarter of the twentieth century? There is no evidence that this issue is the subject of serious consideration and research.

It is true that audit practice has changed and is changing; new methods and techniques are being developed and used; auditing standards have been raised. Yet, how can it be determined if they are adequate until it is certain that the objective they are designed to achieve is right. Against what criteria can the adequacy of practice be judged in the absence of a basic philosophy. The theoretical basis of the audit function has received little attention in the past and yet it is an evolving function reacting to social change and need. The doubt and uncertainty of the public about the audit function and suspicion as to its inadequacy in terms of satisfying a social need is almost mirrored by the lack of comprehension by auditors of the wider relevance of what they do and of the underlying nature of the public disquiet. This is not intended to criticise the integrity and competence of professional auditors. Far from it. Without doubt, the immediate and explicit objects of any audit are well understood and it is not the purpose of this paper to elaborate on them. However, these objectives must not be seen as an end in themselves but as a means only of fulfilling the audit function in the particular social institution and it is to this that the auditor should address his attention.

The terms of reference of any audit can only imperfectly convey the principle of the audit and it is this which should determine practice. The Companies Acts, the Nationalised Industries Acts, the Savings Banks Acts, the Building Societies Acts, the Friendly Societies Acts, etc. do not set out why there has to be an audit; they specify very little about what is required in the audit. There is a widespread acceptance that audit has some well understood meaning and significance. Yet, professional literature does not

¹ In re Kingston Cotton Mill Co Ltd (1896), 2 Ch. 279.

attempt to explain the social function and the conceptual principles of audit. For example, explanations from the statements of the professional bodies read –

‘The term “audit” as used throughout this study refers to an auditor’s examination – performed without restriction by management as to scope – of the basic, general purpose financial statements of business conducted in corporate form.’

‘The principal function of the auditor is to express a professional opinion on the financial statements of his client.’ (*Accountants International Study Group*)²

‘The purpose of the work of the auditors is to enable them to express an opinion as to whether the accounts presented to the members show a true and fair view.’ (*Institute of Chartered Accountants in England and Wales*)³

‘The objective of the ordinary examination of financial statements by the independent auditor is the expression of an opinion on the fairness with which they present financial position and results of operations.’ (*American Institute of Certified Public Accountants*)⁴

and, from a selection of the leading texts –

‘The object of a modern audit . . . has as its ultimate aim the verification of the financial position disclosed by the balance sheet and the profit and loss account of the undertaking.’⁵

‘The object of an audit is to ensure that the accounts on which the auditor is reporting show a true and fair view and are not misleading.’⁶

‘An audit is an examination of accounting records undertaken with a view to establishing whether they correctly and completely reflect the transactions to which they purport to relate.’⁷

This representative selection is clear on the immediate objectives but goes no further and does not help in an enquiry as to the underlying purpose of these objectives. These objectives must be set in some wider social context and it is this which must be sought.

‘Without audit, no accountability; without accountability, no control; and if there is no control, where is the seat of power’ states Professor W. J. M. MacKenzie⁸ and this looks more like a pointer to the social

framework of the audit function.

Accountability

Admittedly the comment is made in relation to government but it is equally apposite in other social institutions, in business, finance, social and other services. The powers of directors, managers, administrators, governors – whatever may be the name of those entrusted with decision making authority in these diverse institutions – is not absolute. The power is granted and is exercised at the behest of some other group which society has placed in this superior position, generally with the force and sanction of law. Directors, managers and administrators have this duty of accountability, a duty to demonstrate the quality of their performance within the constraints of the limited responsibility which has been entrusted to them. It is in this context that society has conceived the audit function whereby the performance of, and the account of their performance, submitted by the directors, managers, etc. may be subject to some scrutiny on behalf of those to whom the directors, managers, etc. are accountable. The starting point therefore is to establish what degree of accountability is required. For this purpose it is not too important to establish where the law stands – or is thought to stand – at the moment. The position is taken that the law is the creature of society and may be enacted to give sanction to what society has determined to be desirable or to what has on some criteria been determined by legislators to be desirable, in the best interests of society. The issue under examination is the role of the auditor in modern society as it is emerging and evolving to meet the social needs of society. Nor is it relevant to this study to consider whether the role as so conceived could be filled by those who are educated and trained by reference to present professional requirements. Education and training have to be developed to meet the need – as has been done in the past and is being done, for example, in relation to computers.

Although society has increasingly concerned itself with, for example, conditions of work and employment, with qualities and standards and with amenity and public interest, has legislated in these areas, and has made institutions accountable for their actions it is only in relation to financial affairs that the concept of accountability subject to audit has developed – and an analysis of the character of this accountability shows that it is not a fixed but an evolving concept. At an early stage, at the time of the growth of corporations with limited liability from the middle of the nineteenth century, particularly with the increasing incidence of separation of management and capital, the primary need was seen to be honesty and regu-

² Accountants International Study Group *The Independent Auditor's Reporting Standards in Three Nations*, para 7.

³ The Institute of Chartered Accountants in England and Wales, *General Principles of Auditing*, p. 6.

⁴ American Institute of Certified Public Accountants, *Auditing Standards and Procedures*, p. 9.

⁵ *Practical Auditing*, Spicer and Pegler, 15th Edition, 1969, p. 2.

⁶ *Manual of Auditing*, VRV Cooper, 2nd Edition, 1969, p. 1.

⁷ *Auditing*, L. R. Dicksee, 18th Edition, 1969, p. 1.

⁸ *The Accountability and Audit of Governments*, B. L. Normanton, Foreword, p. vii.

larity in financial affairs. Indicative of the general nature of accountability in business carried on by limited companies was the nature of periodic account required – a balance sheet only – and the standard or quality of reporting required – ‘a true and correct view’. It was not until 1929 that a profit and loss account was required – the details of it were not specified and it was not required to be embraced in the audit report. Not until 1948, was there specified in some detail the information required to be presented in the balance sheet and the profit and loss account and at the same time the standard or quality of reporting required was revised to ‘a true and fair view’.

These dates and others which can be quoted over 100 years when different matters of accounting were specified in statute are merely milestones recognising what was an evolutionary change in society's concept of accountability in limited companies. The earlier requirement for honesty and regularity, demonstrated by a balance sheet giving a true and correct view, was not too concerned with profit measurement provided the profit was not over-stated to the possible prejudice of creditors' interests and provided it was not misappropriated to the prejudice of shareholders. However, progressive social change over a century has resulted in considerable change. The increased size and complexity of business units, the development of a class of professional managers with little or no stake in the capital, greater sophistication in the techniques and practices of management, much more informed scrutiny and review of business performance and accounts have been the principal factors contributing to the development of a wider and more demanding interpretation of what management were accounting for. The influence of economists and others in the direction of affairs, accompanied by an understanding of the economic significance for society of the policies and decisions of major national and international business groupings has resulted in much greater interest in the efficient utilisation of resources and accordingly in the quality of managerial performance. Over the period profit came to be recognised as a yardstick with which to measure management performance. Parallel with this development, as a consequence of the increasing complexity of business operations and of the industrial process it became recognised that even in the limited context of honesty and regularity, as a quality of the balance sheet, ‘correct’ was too absolute for a view which was substantially dependent on the opinion and judgement of management in relation to material items. However, when ‘fair’ was introduced as the requisite standard in 1948 honesty and regularity were still the keystones of management accountability, and it was

in this context that their performance and their report were to be judged.

Introduction of the concept of ‘fairness’ in financial reporting prompts some speculation on the influence of social values on the quality of financial accountability and reporting. It is part of the thesis of this paper that the quality of accountability expected in business is a reflection of the ethics and standards of society and is the product of the attitudes of society to the responsibilities in respect of the exercise of which the accountability is due. Society's views of what should be expected of directors and managers will fashion the accountability and changes in social thinking will, accordingly, result in changed expectations. There is no doubt that changes in social, economic and political thought over a century and a half have changed the quality of accountability expected of directors and managers. The change is very much greater than is implied in even the fairly extensive changes in specification in the statute, and in the movement from ‘correct’ to ‘fair’. The real essence of the change has not been effected by statute at all. The important change has been the evolution from a standard of honesty and regularity to one of efficient utilisation of resources. While this change has taken place in the quality or character of accountability the criteria of the test of the report of accountability have remained the same – truth and fairness in presentation – i.e. the matters of which the truth and fairness is in issue have changed.

From a test of what was true and correct in relation to honest intromission, the character of the report revealing the quality of the accountability in business has developed, through what was a true and fair view of the resources in respect of which honest intromission was required, to what is a true and fair view of what is required to be presented to investing shareholders to meet information needs – not only in relation to honesty and regularity of management, but in relation also to efficiency of management in the allocation, utilisation and control of resources, as a basis of decision, not so much on directors' appointments and dividend distribution, although these still apply, but as a basis of decision on investment.

The implications of this for the auditor are clear. The function in its basic concept is unchanged but the demands of the function have changed immensely and the social significance of the function has changed from being one of mainly private concern to being one of considerable public concern. Since the auditor is the expert scrutineer with the responsibility of ensuring that the quality of management accountability is maintained and demonstrated he must understand and keep abreast of the evolutionary changes in the quality of accountability that is required.

The fact that the audit function does change and adapt to the views of society can be verified from the professional texts. In 1896 detection of errors seems to have been the primary objective.

'An Audit, to be effectual, that is, to enable the auditor to certify as to the accuracy of the accounts presented, may for practical purposes be divided into three parts, namely, to guard against,

1. Errors of omission;
2. Errors of commission; and
3. Errors of principle.⁹

However, by 1919, the detection of fraud ranks more significantly.

- 'The object of an audit may be said to be threefold
1. The detection of fraud.
 2. The detection of technical errors.
 3. The detection of errors of principle.

On account of its intrinsic importance the detection of fraud is clearly entitled to be considered an "object" in itself, although it will be obvious that it can only be concealed by the commission of a technical error, or of an error of principle. It will be appropriate therefore to combine the search after fraud with search for technical and fundamental errors; but it can never be too strongly insisted that the auditor may find fraud concealed under any item that he is called upon to verify. His research for fraud should therefore be unwearying and constant.¹⁰

and by 1969 both fraud and error have been relegated to subordinate importance.

'The main object of an audit is to give a report on the view presented by the accounts and statement prepared by the client (and his staff), in accordance with the terms of the auditor's appointment. Although of great importance, detection of fraud and error must be regarded as incidental to this main object.¹¹

This current view was confirmed by James C. Stewart writing in 1956

'I take the main objective of an audit to be to enable the auditor to express an opinion for the guidance and protection of proprietors; the detection and prevention of fraud or error may be incidental results of the audit but are not, in my opinion, objectives in themselves.¹²

and by John A. Stewart in 1958

'The prevention and detection of error and fraud

is not regarded as a primary purpose of the audit.¹³

Fraud and errors

Reassuring as this view may be to the auditor there are good grounds for asking if society so readily accepts it or if in the event of having to decide the issue the courts might see it quite so clearly. Admittedly it is a question of emphasis and relative importance.

This emphasises the importance of developing a concept of what it is that the ethics and standards and social philosophy of society shape as the kind of accountability which is expected, and, through audit, exacted of directors and managers and others.

Within the context of the accountability so conceived society is entitled to expect to be advised, as a result of audit, if in any respect performance has fallen short.

It is not disputed that it is the responsibility of directors, managers, etc. to protect the business or organisation against error, fraud and defalcation; and that an auditor cannot and has never been expected to guarantee accounting and accounts. However, it seems likely that the public concept of the audit function would include an expectation that the auditor should, at least, take explicit responsibility and say that, on the basis of his examination, there is a probability (to be qualified and preferably quantified) that error, fraud and defalcation have not remained undetected.

Criticism of the audit and of auditors at the present time largely begs the question of honesty and regularity. Auditors are regarded as honest, competent and of integrity but misguided. This may well be implicitly a tribute either to the general integrity of directors, managers, etc. or to the effectiveness of the audit in that regard. Yet it is a dangerous subordination of the importance of detection of fraud and error. It fosters a complacent attitude of mind which is totally inappropriate. Another of the dicta which should be jettisoned immediately – not because it is wholly untrue but because of the attitude of mind it engenders – is again attributed to Lord Justice Lopes in the Kingston Cotton Mill¹⁴ case.

'Auditors must not be made liable for not tracking out ingenious and carefully laid schemes of fraud where there is nothing to arouse their suspicion . . . ' It is too passive. Society is entitled to expect from the auditor an imaginative, penetrating, enquiring attitude which is alert to the opportunities for irregularity in the particular circumstances; not solely waiting, however diligently, for the event which arouses suspicion.

⁹ *Auditors: Their Duties and Responsibilities*, F. W. Pixley 7th Edition, 1896, p. 437.

¹⁰ *Auditing*, L. R. Dicksee, 11th Edition, 1919, p. 7.

¹¹ *Practical Auditing*, Spicer and Pegler, 15th Edition, 1969, p. 3.

¹² 'Current Auditing Problems: Some Reflections and Queries', J. C. Stewart, *The Accountants Magazine*, Vol. LXI, 1957, p. 217.

¹³ 'Auditing Methods and Responsibilities', John A. Stewart, *The Accountants Magazine*, Vol. LXIII, 1959, p. 15.

¹⁴ In re Kingston Cotton Mill Co Ltd (1896), 2 Ch. 279.

Fairness and the public interest

However, even more demanding than this traditional responsibility is the role of the auditor as the guardian of the elusive quality of fairness in the presentation of a financial report of business. Without legislative change, society's interpretation of the application of fairness has changed over 25 years, moving with the change in what society regards as the nature of accountability of business directors and managers.

What has been insufficiently recognised is that the change in the nature of accountability obliges directors and managers to communicate not only information which demonstrates the quality of their performance, but, in addition, adequate information for the various recognised decisions of the shareholders to whom the information is addressed. However hard and conscientiously managers may try to meet this requirement, society has cast the auditor in the role of judging whether it is good enough. The auditor is the one person with sufficient knowledge of all the facts and circumstances, with the professional competence which gives an appreciation of the issues involved and an understanding of what communication can be achieved, who is required to exercise independent judgement and to say, measured against society's requirements as a report to shareholders, this financial report gives a true and fair view.

A financial report prepared by the directors with complete integrity, presenting what they believe to be a true and fair view, may not give a true and fair view, in the opinion of the auditor, not because the directors are at fault, but solely because their involvement prevents them from seeing the position dispassionately.

Perhaps the most difficult point to comprehend is that the view which is true and fair is not and cannot be defined by the statute. On its own, satisfaction of the formal requirements of the statute is not an adequate test of true and fair presentation. The directorial or managerial responsibility is to think in terms of the duty of accountability and to make the report which discharges that duty. The auditor through his skill in accounts and his knowledge of business and finance must be thinking of ways in which misunderstanding, misrepresentation or confusion could be caused not necessarily by dishonesty or error or fraud, although he obviously must consider these, but through the use or misuse of the processes of accounting. The scope for this is large in the complexities of industrial processing, of distribution and of financial relationship.

It is not sufficient for the auditor to wait for a clue. Nor is it sufficient for the auditor to act solely within what he conceives to be his legal liability. The ultimate test is the public interest – not a set of club

rules which auditors may work out for themselves to make life less intolerable. It is the degree of penetration and perception which the auditor is able to and prepared to apply in his examination and in his assessment of the truth and fairness of management's report, which is at issue. The issue which is at stake is not the quantum of the disclosure but the relevance and quality of what is in fact presented.

Social responsibilities of business

A further factor which must be taken into account is that society's view as to the social responsibilities of business are changing and the emerging changes will have an impact on the pattern of financial accountability and consequently on the auditor's role. Although the legal framework of business based on the social thinking of the nineteenth century still gives prior place in accountability to the providers of capital there is now increasing acceptance that there is a major responsibility to employees and to the community – perhaps also to customers – as to how the business is managed and its policies directed. While there are inevitably financial constraints and the standards of efficient financial management are increasingly rigorous these have to be viewed in the context not solely of profitable operation for the benefit of capital but rather of efficient operation for the benefit of the several interests of employees, the community and capital – and perhaps in that order.

This is not a trend in the UK alone – employees' representation on supervisory boards in Germany and compulsory profit sharing in France are demonstrations of the same philosophy. The previous Government in this country was committed to a re-examination of 'the whole theory and purpose of the limited joint stock company, the comparative rights and obligations of shareholders, directors, creditors, employees and the community as a whole'¹⁵ and had declared its intention to provide by legislation that trade unions could 'obtain from employers certain sorts of information that are needed for negotiations'.¹⁶ The essential elements of the same philosophy were accepted by the present Government which stated that it considered 'that it is an essential part of the successful conduct of collective bargaining that the employer should not unnecessarily withhold information about his undertaking that the trade union representatives need in the course of negotiations' and that 'the employees of the larger employers should be entitled to some basic information about the undertaking, just as shareholders are in the case of public companies. The provision of this informa-

¹⁵ President of the Board of Trade, House of Commons Debates, 14 February 1967, Col. 359.

¹⁶ In Place of Strife, Command 3888, 1969.

tion to employees would recognise the interests which they have in the progress of the undertaking for which they work and would acknowledge its obligations towards them.¹⁷ The means of ensuring this are now included in the provisions of the Industrial Relations Act.¹⁸

A change in the focus of accountability does not reduce but may well enhance the importance of the auditor's role. Insofar as the change of focus is likely, if anything, to add rigour to the expectations of managerial efficiency in financial administration, the social significance of the audit function is raised in importance.

In a situation in which society has accepted that profit is one valuable yardstick of managerial performance, the next stages are not only to require norms against which to measure past performance, but to expect management to communicate on what basis and on what criteria decisions on future operations are based, which will inevitably involve saying something about future profits, however circumscribed any such figures may be.

Society is also going to expect a level of efficiency and sophistication in financial administration and in the management of business policies which will lead it to expect to be disclosed by audit not solely a fair view of the profit which has been earned as evidence of management's success, of the allocation of resources and of the prospects for the future but in addition an opinion as to the adequacy of the bases on which financial decisions were taken.

In some European countries something of this kind is already undertaken and it is significant that in current committee discussions in Europe the proposal has been made that the auditor should have the responsibility of saying when he recognises the signs of impending financial failure. In a paper in 1963 Professor Dr Willy Minz drew attention to the position in Germany 'according to a decision in the German Federal Court the auditor is obliged to issue a warning if he has formed serious doubts regarding the firm's economic state in the course of his audit, and particularly if there is a danger of some ruinous development. (This is the so called "duty to speak".)'¹⁹

In addition to this extended responsibility in relation to management's performance the auditor has to consider the special features of his role in relation to the report of the directors and managers to employees and to the community. The concept of fair presentation will still apply but to a different

report and to different information from that presented to shareholders. This also is a challenging role for the auditor.

It is not within the scope of this paper to deal with what is conceived as the management audit which involves examination and appraisal of the whole structure and operation of management. However, increasing social concern and increasing acceptance that management performance and accountability are matters of public concern rather than of solely private concern are likely to lead to the introduction of such an audit on some regular and recurring basis. The terms of reference can be sufficiently separately distinguished and it is not a role which should be undertaken by the financial auditor.

Social audit

If would, however, be appropriate in this paper to make brief reference to what has been described as the social audit of business. This is in connection with the social accountability of business, to the increasing recognition of which reference has been made. It is suggested that this is the way by which the public (society) may be informed of the manner in which a large business with a position bordering on monopoly is discharging its social responsibilities in the field of labour relations, pricing policies and local interests. Matters affecting the environment and pollution, which are of current concern would clearly come within this field. This is not a duty for the financial auditor but the development is a further demonstration of the important social role which society recognises for the audit function – a system of oversight and inspection to safeguard standards of conduct in the public interest.

Audit of public expenditure

What has been said of audit in the context of business enterprise carried on within the framework of a limited company is of wider application. The concepts of accountability and of audit in relation to financial affairs are of fairly universal application. It is, therefore, worth noting how the same social forces have resulted in change in another area of major importance, that of public expenditure, i.e. expenditure by central or local government, both for the execution of government and for the provision of community or social services.

As a sphere of audit this is very much older than business but the basic requirement of accountability has been essentially the same, honesty and regularity within the particular context of the government budgetary system for appropriation and control.

However, here again the concept is under radical change. The quality of financial administration is

¹⁷ Industrial Relations Bill Consultative Document 1970, paras 145 and 148.

¹⁸ Industrial Relations Act 1971, Sections 56 and 57.

¹⁹ Record of Proceedings European Congress of Accountants, Edinburgh, 1963, p. 174.

improving; what is required of government in administrative efficiency is more rigorous. Greater appreciation of the need for efficiency in utilisation of scarce resources, greater concern about the size of the total resources administered by government, greater understanding about the impact of government expenditure on the economy and on individual living standards have all made their impact. Different considerations have to be brought to bear, because, except in State trading operations, no product is being sold, there is no market test on the value of the activity, there is no profit yardstick on the success of the operation. Accordingly, along with the adoption of more sophisticated mathematical techniques for decision making and control, study of and experimentation with cost benefit analysis and output budgeting are being undertaken in government financial administration. As the concept of accountability adjusts to embrace these changes audit must follow, ensuring for society that the quality of accountability it requires is in fact achieved. The role of the auditor in relation to central government as exercised by the Exchequer and Audit Department under the authority and direction of the Comptroller and Auditor General has already developed in this way. In Scotland, at least, this has not yet happened in local government audit and there are grounds for considering that it is overdue. The continuing concentration of external audit on honesty and regularity

is out of sympathy with the trend of the times and the needs of society in relation at least to the larger authorities.²⁰

Conclusion

Two significant features of modern society are the increasing concentration of economic resources in the control of national and international corporations and the increasing proportion of national income which is controlled and administered by the State. Both of these phenomena represent concentrations of power. In a democratic society power is not absolute and those who exercise it are accountable. The power must be exercised in the public interest and some system of surveillance must be operated to monitor the quality of the report on accountability. The character of accountability does not wholly lend itself to precise definition and is of an evolving nature adjusting to changes in social, political and economic thought and in the ethics and standards of society.

The audit function is a critical one in ensuring accountability in the broadest and deepest sense; to be adequate for it the auditors require to be sensitive to and to react to changes in the public concept of what accountability is. This is the area of the neglected philosophy of auditing.

²⁰ For further development of this see: 'The Audit of Local Authorities', David Flint, *Local Government Finance* (October 1971).

Handling Working Capital in Discounted Cash Flow Calculations

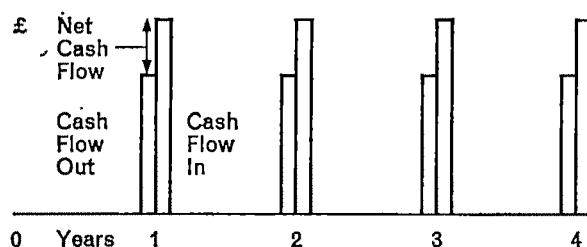
Hugh W. T. Kerr

Most capital investment projects require some cash to support them as part of the initial outlay. It is suggested in the literature on the discounted cash flow techniques that an allowance for the working capital requirement should be included with the initial investment when calculating the discounted yield return or the net present value of a project, but no clear guidance is given as to how this allowance should be assessed. This article examines this problem with special reference to agriculture where working capital is of importance because it is often a high proportion of the total capital investment particularly for marginal projects.

In addition to the fixed capital (defined as the investment in assets employed over more than one production cycle) there is a requirement for working capital, which is the cash required to complete a single production cycle. It is locked up in the project until the product is sold and has to be re-invested again in order to continue it. The working capital requirement will be increased by any period of storage between completion and sale. Since the DCF technique implies that interest has to be earned on money only while it is invested in the project any allowance for working capital should be related to the annual average and not the peak requirement.

A difficulty arises in handling the working capital requirement in DCF calculations because it is often the assumption that the cash flows in and out of the business giving rise to the annual net cash flow¹ all take place at the end of each year. This procedure can be represented diagrammatically as shown below.

Figure 1

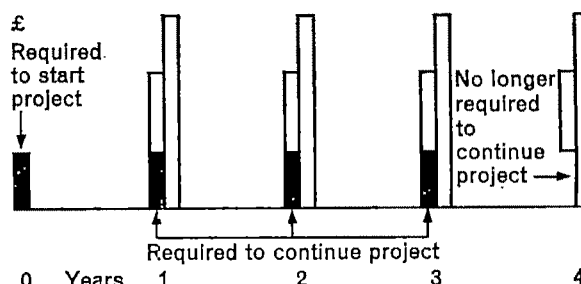


A situation where part of the cash flow out is made at the beginning of the year whilst the cash in-flow

¹ The net cash flow is the cash in-flow less the cash out-flow.

and the remainder of the cash out-flow take place at the end of the year, can be handled easily by the normal DCF technique. That part of the annual expenditure made at the beginning of the year is simply entered at the beginning of the project as it actually occurs. The same sum will have to be paid out at the beginning of each year to continue. It will not, however, have to be spent at the end of the final year since the project is not being continued and the normal procedure is to include it in the terminal value² of the project. This situation is represented diagrammatically in Fig. 2.

Figure 2



Both these patterns, however, are unlikely to be representative of most real situations since both the cash out-flows and the cash in-flows may occur continuously or at various times throughout the year. Merrett and Sykes³ have shown that provided the

² The terminal value of a project is an estimate of the cash that would become available as a result of its discontinuance, i.e. through the sale of equipment, etc., and release of working capital locked up in the business.

³ A. J. Merrett and Alan Sykes 'Capital Budgeting and Company Finance' Longman, 1966. In this work Merrett and Sykes suggest net working capital should be used for investment appraisal and define it as:

Current Assets (stock+debtors+cash) less Current Liabilities (creditors+bank overdraft and other short-term borrowings).

Interest payments on the debt used to finance working capital are then included in the cash outflows in arriving at the net cash flows. If the working capital fluctuates throughout the year and bank loans are a high proportion of the total capital required, often the position in agriculture, then it is better to include the gross working capital requirement in the total capital requirement and exclude interest payments from the cash flows. In these terms gross working capital is the current asset *before* deduction of the current liabilities and is equivalent to the cash required in addition to the fixed capital to support one cycle of production as defined earlier in this article.

cash out-flows and in-flows occur fairly evenly throughout the year, the conventional year end net cash flow gives a reasonable approximation of the real situation. This is because the time elapsing between each flow will still be one year if the cash flows are assumed to take place at an average position half way through the year. However, this is by no means always the case and when the flows are unevenly or irregularly spaced throughout the year then this approximation no longer holds good particularly if the working capital represents a high proportion of the total investment. It is then difficult to assess the working capital requirement for discounting annually in these circumstances.

The problem can be overcome by preparing shorter term cash flows – say, monthly – and discounting these using the appropriate monthly discount factors. The assumption made then is that the cash flows in and out of the business take place at the end of each month instead of at the end of each year. The payments representing working capital and the receipts can be shown nearer the time when they occur⁴ so reducing the margin of error.

The following example was used to test the effect of varying the within-year cash flow patterns and consequently the working capital requirement whilst maintaining the same annual net cash flow and the same fixed capital investment. The project used was a pig fattening enterprise with an annual throughput of 1,680 purchased weaners for selling as baconers and cutters at quarterly intervals. The purchases and sales were then changed so as to take place at two-monthly, six-monthly and annual intervals whilst maintaining the annual net cash flow at £3,174. These altered patterns of cash flow no longer relate to real agricultural projects.

The monthly cash flows were then discounted

using the appropriate monthly discount factors over a five-year period and writing off the fixed investment in buildings of £5,640 by the end of the project. The discounted yield returns for each of the cash flow patterns are shown in Table 1. The different cash flow patterns giving rise to different working capital requirements create marked differences in the yield obtained on the total capital investment ranging from 39.6 per cent for the shortest cycle down to only 10.5 per cent for the annual cycle even though the annual net cash flow and the fixed capital investment are the same in each case. The monthly cash flows are shown in Appendices 1, 2, 3 and 4.

Discounting short-period cash flows might be thought too cumbersome and laborious for general practice. If cash flows are to be discounted annually, an allowance for working capital has to be entered at the beginning of the project (year 0) and the question then arises as to how it should be assessed. Four methods were used to arrive at the working capital requirement for each of the four cash flow patterns previously discounted monthly:

- (1) the initial working capital only (i.e. for the first batch of animals);
- (2) the peak requirement for a single production cycle;
- (3) the average requirement for a single production cycle;
- (4) the annual average of the negative monthly cumulative balances (obtained from the monthly cash flow statements shown in Appendices 1, 2, 3 and 4).

The first method assumes that the cash out-flows, representing the working capital other than the initial outlay, and the cash in-flows occur smoothly throughout the year. The second method assumes that the

Table 1
Discounted yield returns discounting monthly and annually different cash flows patterns

Cash flow pattern	Discounting monthly	Discounting annually				Percentage return
		Initial working capital only (Method 1)	Peak requirement for single production cycle (Method 2)	Average requirement for single production cycle (Method 3)	Annual average of negative monthly cumulative balances (Method 4)	
Two-monthly	39.6	36.2	25.4	29.5	35.1	
Four-monthly	25.6	28.5	16.9	21.4	24.8	
Six-monthly	18.7	23.4	12.8	16.6	18.4	
Annual	10.5	15.5	7.0	9.6	10.5	

⁴ In this article it is assumed that the cash flows in and out of the business correspond with the movement of the physical assets. Of course this is not true in practice. However, cash flow statements can be related to the movements of cash and it is often possible to reduce the working capital requirement by altering the pattern of payments. If delayed

payments are due to a constant and reliable pattern of trading for which no interest is charged then it is legitimate to reduce the working capital requirement accordingly. But if they are unlikely to be a regular feature it is safer to relate the cash payments to the movement of the assets.

total cash out-flow is locked up in the project over the whole period of the production cycle, whereas the third uses the average of this sum. The annual average of the negative monthly cumulative balances is used in the final method as representing the short-term investment in the project on which a return has to be earned.

The allowances for the working capital require-

ment assessed by each method (shown in Table 2) were included in the initial capital outlay. The cash flows were then discounted annually over a five-year period writing off the fixed capital investment as before, to arrive at the discounted yield returns which are shown in Table 1 beside those obtained by discounting monthly.

Table 2
Allowances for working capital used in annual discounting calculations

	<i>Initial working capital only</i>	<i>Peak requirement for single production cycle</i>	<i>Average require- ment for single production cycle</i>	<i>Annual average of negative monthly cumulative balances</i>
	<i>(Method 1)</i>	<i>(Method 2)</i>	<i>(Method 3)</i>	<i>(Method 4)</i>
	£	£	£	£
<i>Cash flow pattern</i>				
<i>Two-monthly</i>				
Initial working capital only	1,659	1,659	1,659	1,659
Allowance for remainder	—	2,642	1,321	198
<i>Four-monthly</i>				
Initial working capital only	3,318	3,318	3,318	3,318
Allowance for remainder	—	5,284	2,642	1,254
<i>Six-monthly</i>				
Initial working capital only	4,977	4,977	4,977	4,977
Allowance for remainder	—	7,926	3,963	2,668
<i>Annual</i>				
Initial working capital only	9,954	9,954	9,954	9,954
Allowances for remainder	—	15,852	7,926	7,265

Note: Fixed capital of £5,640 for buildings written off over five-year period charged in each example in addition to above sums.

Discussion

Compared with discounting monthly, discounting annually using the initial working capital only and making no further allowance (Method 1) gives returns which are inconsistent and generally over-estimated. Using the total cash requirement for one production cycle (Method 2) gives lower returns since this procedure implies that the working capital requirement is locked up in the project for the whole period. However, if the cash out-flows occur throughout the production cycle this is not so, and averaging this cash requirement (Method 3) gives returns closer to those obtained by the monthly discounting method.

The annual average of the negative monthly cumulative balances (Method 4) gives answers which are close to those obtained by monthly discounting. They are consistently lower and the ratio of the two could

be expressed as a function in terms of time. However, short period cash flows have to be prepared to find the monthly cumulative balances, and it is not difficult to discount these, particularly if computer facilities are available. In any case it is often important to draw up short period cash flow statements for other reasons when assessing a capital investment project.

When the cash flows in and out of the business are irregular and uneven it is, therefore, safer to discount short period cash flows over its whole life when assessing the worthwhileness of a project. As a compromise, especially when the anticipated life of the project is long, short period cash flows could be discounted for the first year or two since these carry the most weight in the calculation and the remaining years discounted annually.

Assessments of working capital allowances for discounting annually			
Initial working capital only (Method 1)	Peak requirement for single production cycle (Method 2)	Average requirement for single production cycle (Method 3)	Annual average of negative monthly cumulative balances (Method 4)
3,318	$1,321 \times 4 = 5,284$	$1,321 \times 4 = 5,284$ Average = 2,842	1,321 2,842 3,963 283 1,584 2,905 528 1,847 15,051
			Annual average = 1,254

Appendix 3

Six-monthly pattern of cash flows

	Month												£ Year
	1	2	3	4	5	6	7	8	9	10	11	12	
Livestock sales						14,490						14,490	28,980
Livestock purchases (4,977)	1,176	1,176	1,176	1,176	1,176	1,176	1,176	1,176	1,176	1,176	1,176	4,977	9,954
Purchased concentrates	75	75	75	75	75	75	75	75	75	75	75	1,176	14,112
Regular labour	70	70	70	70	70	70	70	70	70	70	70	76	900
Miscellaneous												70	840
Total costs	1,321	1,321	1,321	1,321	1,321	6,298	1,321	1,321	1,321	1,321	1,321	6,298	25,806
Surplus (+) or deficit (-)	(-)	1,321	(-)	1,321	(-)	1,321	(-)	1,321	(-)	1,321	(-)	1,321	3,174
Accumulated balance													
Surplus (+) Deficit (-)	(-)	1,321	(-)	1,321	(-)	1,587	266	(-)	1,055	(-)	3,697	(-)	3,174

Assessments of working capital allowances for discounting annually			
Initial working capital only (Method 1)	Peak requirement for single production cycle (Method 2)	Average requirement for single production cycle (Method 3)	Annual average of negative monthly cumulative balances (Method 4)
4,977	$1,321 \times 6 = 7,926$	$1,321 \times 6 = 7,926$ Average = 3,963	1,321 2,842 3,963 5,284 6,605 1,055 2,376 3,697 5,018 31,961
			Annual average = 2,663

Accounting reform: standardisation, stabilisation, or segregation?

R. A. Rayman

Introduction

In May 1952, the Council of the Institute of Chartered Accountants in England and Wales issued Recommendation N 15 to the effect that accounts prepared on the conventional basis are not necessarily suitable for purposes such as price fixing, wage negotiations, or taxation, or even for the determination of distributable profits. Various remedies have been suggested. They include proposals for standardising accounting procedures, for stabilising accounts in terms of current purchasing power, and even for abandoning the accrual basis of accounting altogether in favour of a cash flow system. The purpose of this paper* is first of all to consider these alternative proposals and then to present the case for a segregated system of funds and value accounting.

The Conventional System of Accounting

Under the conventional system of accounting, inputs into the productive process are recorded at cost price when they are purchased. Outputs are recorded at selling price when they are eventually sold. In the intervening period, as input goes through the process of conversion into output, accounting records are normally kept on the basis of historic cost. When an asset is used, the cost of the used portion is charged in the profit and loss account as an expense, and the cost of any unused remainder is carried forward in the balance sheet as an asset. The problem is to determine which costs should be regarded as 'used up' and which costs should be regarded as 'left over'. Because of the diversity of business situations, some discretion is allowed in making the crucial distinction between capital and revenue. The price of this flexibility, however, is what appears to be a multiplicity of

generally accepted accounting principles. Consequently, conventional accounting reports are partly a reflection of the events of the accounting period and partly a reflection of the choice of accounting procedure.¹

Uniformity – the right solution for the wrong problem

If the current problems of accounting are identified with the apparent multiplicity of accounting principles, the logical solution is uniformity. The problem, however, is not merely that accounts can give a different reflection of the same events when the accounting procedures are different, it is that accounts can give a different reflection of the same events when the accounting procedures are exactly the same.²

Many of the problems of accounting arise because the necessity for up-to-date information dictates the division of the life of the firm into arbitrary accounting periods which do not necessarily coincide with the cycle of the firm's operations. If all inputs into the

¹ The discretion allowed in treating expenditure (e.g. on manufacturing overheads, on research and development, on the acquisition of fixed assets and inventories, etc.) either as capital or as revenue, is a major cause of the arbitrary nature of the conventional methods of income determination. It does not, however, interfere with the audit function of accounting for stewardship, where the monetary figures are significant not so much for their own sake but rather as symbols of the underlying physical reality. See 'Is Double Entry really necessary?' *Accountancy*, October 1970.

² See K. MacNeal, 'What's Wrong with Accounting?' *The Nation* (New York), 7–14 October 1939, reprinted in W. T. Baxter and S. Davidson, *Studies in Accounting Theory*, London: Sweet and Maxwell, 1962, pp. 56–69. Consistent application of the realisation principle, for example, may produce an inconsistent result (as in the first set of balance sheets in Table 1 below). Nevertheless, the view is still held that 'all of this arises . . . because management usually has a choice of many alternative ways of measuring and reporting financial data' and that 'the root of the problem lies in the wide range of choice open to management in the selection of accounting principles'. [E. Stamp and C. Marley, *Accounting Principles and the City Code*, London: Butterworths, 1970, pp. 130, 131.]

* Based on a paper presented at the 1971 Week-End School of the Association of Certified Accountants at St John's College, Cambridge.

productive process were converted into output and sold within a single accounting period, there would be no problem. The only asset on the balance sheet would be cash. Business, however, is a continuous process. At the end of an accounting period there are normally significant amounts of input at various stages of conversion into output.³ They include all the assets in the conventional balance sheet. As these assets 'in progress' have as much claim to be regarded as outputs of the productive process as the outputs which have actually been sold, they cannot be ignored. If accounts are required at the end of the accounting period, monetary values have to be attached. In spite of the practical difficulties of stock valuation, depreciation and overhead allocation, it is the fact of asset valuation which creates problems for accountants rather than the method. For the admission of asset valuations into the accounts represents a departure from the simple recording of transactions which have actually taken place.

As the value of an asset depends on its future returns, asset valuations are in the nature of estimates, even though there may be no explicit intention on the part of the accountant to make forecasts. For example, the balance sheet value of an asset may be simply a statement of its invoice cost. The fact that the valuation can be confirmed or denied by subsequent events, however, gives it the character of an estimate *de facto*.⁴ This is implicit in the use of hindsight in cases where facts about a previous accounting period come to light after the accounts have been published. If the amounts are small enough, they are tucked away in the current year's accounts. If the amounts happen to be too large, the previous year's accounts have to be reopened. The difference between an accounting adjustment and a financial scandal is therefore one of degree rather than of principle.⁵

As a result of the incorporation of asset valuations into the conventional system of accounting, the validity of published financial information is dependent

upon the outcome of future events.⁶ The problem is therefore not so much a multiplicity of accounting principles as a multiplicity of possible outcomes. The case for uniformity is unanswerable, where the underlying circumstances are also uniform. Without perfect foresight, however, there is no way of ascertaining what the underlying circumstances are. Accounting procedures can be standardised, but the earning capacity of assets cannot.⁷ As long as published accounts can be invalidated by unforeseen events, uniformity is not an adequate remedy. Those who advocate the standardisation of accounting procedures have therefore failed to answer the problem they set out to solve, and it may be reasonable to conclude that uniformity is the right solution for the wrong problem.

Stabilised Accounting – the right solution for a different problem

Accounting for changes in the price level is a separate problem which arises from the use of money as the unit of account. To compare revenues and expenses in a profit and loss account or to draw up a list of assets and equities in a balance sheet, when the individual items may be expressed in money at different dates, has been likened to an attempt to add and subtract amounts which are expressed in different currencies.⁸

Some of the proposals for accounting for price level changes are examined by means of the illustration in Table 1. Tweedledum and Tweedledee are dealers in widgets. (Widgets are homogeneous articles with identical physical characteristics.) Tweedledum makes three sales, whereas Tweedledee fails to make any sales at all. The question is, what profit have they made?

The conventional answer, in terms of cash, is that Tweedledum has made a profit of £30, but that Tweedledee has made no profit at all. This is illustrated in the first set of balance sheets. There are two objections. The first is that, if Tweedledum withdraws the paper profit of £30, he cannot remain in the

³ See L. Goldberg, *An Inquiry into the Nature of Accounting*, American Accounting Association, 1965, ch. 8.

⁴ Occasionally the estimation of value is intentional, even though conventional balance sheets are not valuation statements (Institute of Chartered Accountants in England and Wales, *Recommendations on Accounting Principles*, N 18, S. 4). The convention of conservatism, by which assets are not to be stated on the balance sheet at more than their 'value', is a reason for the frequent departure from a strict cost basis of valuation. Hence, fixed assets are written down to their going concern value and current assets are written down to their current market value.

⁵ 'The main damage from the present system does not stem from the few companies . . . where things go spectacularly wrong. The real worry concerns the many companies where, unspectacularly, things merely go less than right.' ['A question for capitalism', *The Economist*, 29 August 1970, p. 9.]

⁶ 'The root of the problem lies in the fact that the assessment of profit of a going concern . . . calls largely for commercial judgement in evaluating the outcome of transactions not yet completed.' [Sir R. G. Leach, 'The President Answers Back', *Accountancy*, October 1969, pp. 725-7.]

⁷ The depreciation of a fixed asset, for example, is a function not only of its physical characteristics but also of the capacity of the organisation to produce and market its product. If, as a result, fixed assets with identical physical characteristics have unequal economic lives, uniform rates of depreciation are clearly inappropriate. Before the economic life has come to an end, however, it is impossible without the aid of perfect foresight to determine what rate of depreciation is appropriate.

⁸ This is a common point of departure for many of the proposals for stabilising accounts.

TABLE 1

A price level problem

On 1 January, Tweedledum commences business with £100 cash.

He completes the following transactions:

1 January Purchases one widget for £100

1 February Purchases one widget for £110

1 March Purchases one widget for £120

31 January Sells one widget for £110

28 February Sells one widget for £120

31 March Sells one widget for £130

On 1 January, Tweedledee also commences business with £100 cash by purchasing one widget for £100. Tweedledee, however, fails to make any sales.

At 31 March, the General Price Index stands at 118 (1 January=100); the Specific (Widget) Price Index stands at 130 (1 January=100).

1. Conventional Balance Sheets at 31 March (in terms of cash)

<i>Tweedledum</i>				<i>Tweedledee</i>			
Capital	£	100	Cash	£	100	Stock (at cost)	£
Profit		30		Profit			
		<u>130</u>					<u>100</u>
							<u>100</u>

2. Balance Sheets at 31 March (in terms of current purchasing power)

<i>Tweedledum</i>				<i>Tweedledee</i>			
Capital	cpi	118	Cash	cpi	118	Stock (at cost)	cpi
Profit		12		Profit			
		<u>130</u>					<u>118</u>
							<u>118</u>

3. Balance Sheets at 31 March (in terms of physical assets)

<i>Tweedledum</i>				<i>Tweedledee</i>			
Capital	widgets	1	Cash	widgets	1	Stock (at cost)	widgets
Profit		0		Profit			
		<u>1</u>					<u>1</u>
							<u>1</u>

— translated into money (in terms of replacement cost)

<i>Tweedledum</i>				<i>Tweedledee</i>			
Capital	£	130	Cash	£	130	Stock (at cost)	£
Profit		0		Profit			
		<u>130</u>					<u>130</u>
							<u>130</u>

4. Stabilised Balance Sheets at 31 March (in terms of current cost)

<i>Tweedledum</i>				<i>Tweedledee</i>			
Capital	£	118	Cash	£	118	Stock (at cost)	£
Real Holding Gain		12		Real Holding Gain			
Current Operating Profit		0		Current Operating Profit			
		<u>130</u>					<u>130</u>
							<u>130</u>

widget business. In that case, it is debatable whether 'profit' is an appropriate description for the £30. The second is that, if Tweedledum had replaced the widget at the end of March, he would have begun the period with £100 in cash and ended the period with one widget — which is precisely what Tweedledee has done. Yet the only change in Tweedledum's balance sheet would be the replacement of the word 'cash' by the

words 'stock at cost'. It would still show a profit of £30 compared with Tweedledee's profit of nothing. The underlying circumstances are the same, but the accounts present different pictures, in spite of the fact that the accounting procedures are the same in both cases. What is more, Tweedledum is liable to pay tax.

It has therefore been suggested that accounts

should be kept in units of constant purchasing power, on the lines of the second set of balance sheets in Table 1. Again the same objections apply, though to a lesser extent. If Tweedledum withdraws the purchasing power profit of £12, he is still unable to remain in the widget business. If he replaces the widget, he still shows a profit compared with Tweedledee and is liable to pay tax on it, even though their circumstances are exactly the same.

To meet these objections, it has been suggested that accounts should be kept not in terms of the power to purchase goods and services in general but in terms of the power to purchase the specific goods and services used by the firm in particular, i.e. in terms of its physical assets. This approach is illustrated in the third set of balance sheets. The translation of the physical balance sheet into monetary terms demonstrates that this is what lies behind the replacement cost philosophy and explains the use of the relevant specific price indices as opposed to the general price index. The previous objections are now met: (a) there are no paper profits, and (b) if Tweedledum replaces the widget, his accounts will show exactly the same as Tweedledee's. On the other hand, replacement cost accounting rests on the assumption of an intention not merely to remain in business but also to remain in the same line of business. If Tweedledum decides to withdraw the money and retire, his ability to buy £12 worth more of goods and services than he could at the beginning of the period is not revealed by accounting on the basis of replacement cost.

A more sophisticated method of stabilising accounts involves splitting the conventional accounting profit into two components – current operating profit, on the one hand, and holding gains, on the other.⁹ A variation of this approach is illustrated in the fourth set of balance sheets.¹⁰ The restatement of capital in terms of general purchasing power indicates how much the investors require if they are to receive back their

original investment not just in terms of cash but in terms of real goods and services. The real holding gain is in the nature of a capital reserve. It is the result of investing in assets whose prices have risen faster than the general average. But it is not available for distribution, unless the firm is willing to go out of that line of business. The current operating profit is the amount which can be distributed without impairing the physical assets of the business.

Full stabilisation on the basis of current cost is perhaps the most promising of the methods of accounting for changes in the level of prices, but it is not intended as a remedy for the problems of asset valuation. During periods of inflation, stabilisation may aggravate those problems, because asset valuations are incorporated at current cost rather than at historic cost, and the scope for discretion becomes even wider. Stabilisation is therefore the right solution but for a different problem.

Cash Flow Accounting – the wrong solution for the right problem

If the current problems of accounting are identified with the incorporation of asset valuations into conventional accounting reports, replacement of the accrual basis of accounting by a cash flow system is not a logical solution.

The argument betrays a fundamental misconception about the nature of accrual accounting. Accrual accounting recognises both cash and credit transactions. 'Accruals' include two fundamentally different types of balance. First, there are balances of debtors and creditors representing claims which have arisen as a result of transactions which have actually taken place. Secondly, there are balances representing asset valuations which depend on events which have not yet occurred. If those balances which represent outstanding claims are thrown away in company with those representing asset valuations, credit transactions are omitted. In contrast to the conventional system which anticipates transactions which have not yet occurred, the cash flow system fails to include all of those which have actually taken place.

As a cure for the problems of conventional accounting, advocacy of a return to the cash flow basis is so drastic that it is in some ways more dangerous than the original disease. It is rather like recommending decapitation as a cure for toothache.

The Need for an Alternative

The accuracy of conventional accounting reports is dependent either on perfect foresight or on complete hindsight. Subsequent events can invalidate the published figures. This is no reflection on the competence or integrity of professional accountants, but

⁹ See E. O. Edwards and P. W. Bell, *The Theory and Measurement of Business Income*, Berkeley and Los Angeles: University of California Press, 1961. Current operating profit is the excess of the current sales revenue, not over the historic cost as it was on the date that the goods were actually acquired, but over the current cost as it would have been, had the goods been acquired at the date of sale. A holding gain is the excess of the current cost of goods sold over their historic cost, i.e. the increase in cost between the date of acquisition and the date of sale. If prices in general have been rising at the same time, however, part of the holding gain is fictitious, in that it merely keeps pace with the rise in the general price level. The real holding gain is a measure of how far the specific assets held by the firm have 'beaten' the general rise in prices.

¹⁰ This follows the proposals put forward by Professor W. T. Baxter in 'Inflation and Accounts', *Investment Analyst*, 1962, 4, pp. 3–11; reprinted in B. V. Carsberg and H. C. Edey, *Modern Financial Management*, Harmondsworth: Penguin, 1969, pp. 50–72.

it does reveal the undesirability of retaining a system of accounting in which the validity of last year's reports depends upon the outcome of next year's events.

The Segregated System of Funds and Value Accounting

It is possible to identify two distinct types of accounting information which are relevant to the needs of investors.¹¹ One is a history of the firm's past, which is not open to challenge by subsequent events. The other is an indication of the firm's potential in the future. As neither type of information is provided by the conventional system of accounting, perhaps there is a case for the segregation of funds and value, so that records of the past can be isolated from estimates of the future.

Funds Accounting

Under the segregated system of funds accounting, records are kept on the basis of the current non-specific claims which arise as the result of business transactions.¹² All transactions, credit as well as cash, are recorded on receipt of the appropriate voucher. Provisions are made in the normal way for transactions which have taken place but for which no voucher has been received by the end of the accounting period. This probably covers the majority of the entries in the conventional records. The difference is that under the segregated system prepayments, stock valuation, depreciation provisions, overhead allocations, and any other asset valuations are ignored (in the funds accounts at least), because they are not records of transactions which have actually taken place.

A funds statement drawn up on this basis presents a complete picture of the firm's external transactions and of its relations with the outside world.¹³ By

¹¹ The term 'investor' refers to any owner or potential owner of equity in the firm, and therefore includes actual or prospective shareholders in limited companies.

¹² The segregated system of funds accounting has been described in 'An Extension of the System of Accounts: The Segregation of Funds and Value', *Journal of Accounting Research*, Spring 1969, 7, pp. 53-89, and summarised in 'Is Conventional Accounting Obsolete?', *Accountancy*, June 1970, pp. 422-9. It is based on the definition of funds as 'current non-specific claims'. Defined in this way, 'funds' describes a relationship between parties to a transaction, which is independent of the liquid assets or the legal instruments which may be the outward manifestation of that relationship. Funds flows can therefore occur in non-cash economies or as a result of non-cash transactions, whereas cash flows cannot.

¹³ The funds statement can be integrated into the conventional system so that it articulates with the other accounting statements in a way which makes it possible to distinguish between funds transactions and asset valuations in the profit and loss account and balance sheet. An illustration appears in both references given in the previous footnote.

contrast, the cash flow statement is a report from which a vital part of this picture is missing.¹⁴ The funds statement, however, is purely an historical record. In order to determine whether the record is good or bad, a system of accounting for value is necessary.

Value Accounting

In order to assess the value of an investment, the investor requires some indication of the potential of the resources in which he owns or is contemplating an equity. A conventional balance sheet is precluded from this role by its very nature. Even if it were possible to show each individual item at its current value, the balance sheet would still give an imperfect indication of the potential of the firm as a whole, for the same reason that a list of the chemical constituents of the human body is a poor guide to a man's personality.¹⁵ Successful resolution of the problems of asset valuation, even if it can be achieved, is not sufficient. For the investor is interested, not in the individual assets for their own sake, but in their earning capacity as a combination.¹⁶

The only transactions of the firm which affect investors directly are (a) contributions from investors to the firm and (b) distributions from the firm to investors. All other transactions are a means to this end. The relationship between the initial contribution from investors and the subsequent flow of distributions to investors can be expressed in the form of a discounted rate of return which may be called the *Investment Rate*. The investment rate is equal to r in the equation

$$\sum_{t=0}^n \frac{x_t}{(1+r)^t} = 0$$

where $x_0, 1, 2, 3, \dots, n$, is the flow of resources between

¹⁴ The Radcliffe Committee has drawn attention to the fact that the supply of money 'meaning by "money" . . . notes plus bank deposits . . . [is] only part of the wider structure of liquidity in the economy', and to the possibilities, in a highly developed financial system, of using non-bank credit. [Committee on the Working of the Monetary System, *Report*, London: Her Majesty's Stationery Office, 1959, chs. 4 and 6.]

Transactions which can bypass the banking system can also bypass a cash flow statement, but they cannot bypass a segregated funds statement.

¹⁵ See L. Goldberg, *op. cit.*, pp. 311, 312.

The problem of valuing complementary assets by reference to their marginal contribution is well known. The absence of any one asset causes the loss of the whole of the joint output. See B. V. Carsberg, 'On the Linear Programming Approach to Asset Valuation', *Journal of Accounting Research*, Autumn 1969, 7, p. 172.

¹⁶ In cases like the purchase or sale of a business, where an accurate assessment of future potential is regarded as particularly vital, balance sheet figures are often rejected in favour of flow projections.

the investor and the firm, and t denotes the time period. The flow may be either negative (contributions) or positive (distributions). If the firm is a limited company with all its issued capital fully paid, subsequent distributions cannot be negative. There is therefore no possibility of multiple solutions to the equation, and the investment rate is mathematically unique.

To take a simplified example of two firms with a life of only three years, suppose that the flows from the investor's point of view are as follows:

End of year:	0	1	2	3
Firm A	-£100.00	+£10.00	+£10.00	+£110.00
Firm B	-£100.00	+£10.00	+£10.00	+£146.40

The investment rate in Firm A is 10 per cent per annum; in Firm B it is 20 per cent per annum. If the investment rate is correct, earnings are equal to the yield at the investment rate on capital invested, and capital invested is equal to the initial contribution from investors plus any subsequent earnings less any subsequent distributions.¹⁷ The capital and earnings of firms A and B are therefore calculated as in Table 2 (with the signs reversed in accordance with the opposite standpoint of the firm).

Although the distributions at the end of the first two years are the same in the case of both firms, Firm B's capital balance is higher than Firm A's on the

strength of the greater distribution at the end of the third year. At the beginning of the third year, therefore, the investment in Firm A is equivalent to a balance of £100.00 on which 10 per cent is receivable, the investment in Firm B is equivalent to a balance of £122.00 on which 20 per cent is receivable.

The investment rate cannot be calculated with certainty, however, until the end of the firm's life, when the distributions have become a matter of history. In the case of a going concern, the investment rate depends not only on the actual distributions which have been made in the past but also on the prospective distributions which are expected in the future. If the expectations are fulfilled, the investment rate will be correct. If the expectations are not fulfilled or if they change during the course of time, the investment rate has to be revised accordingly, and the capital and earnings of previous periods have to be recalculated on the basis of the revised rate.

An illustration of the recomputation of earnings and capital resulting from a revision of the investment rate is given in Table 3 on page 306, where the flow of contributions and distributions between the firm and investors is as stated. The investment rate is estimated initially at 12 per cent per annum. In the fifth year the rate is revised to 10 per cent per annum. The earnings and capital of previous years have therefore to be recalculated at the new rate. If the accounts of the first four years have already been published, the appropriate capital adjustment is made in the published accounts of the fifth.

The central position of the investment rate, as the

¹⁷ See I. Fisher, *The Nature of Capital and Income*, New York: Macmillan, 1906, ch. 14; and K. E. Boulding, 'The Theory of a Single Investment', *Quarterly Journal of Economics*, May 1935, 49, pp. 475-94.

TABLE 2

Calculation of earnings and capital

Firm A		Year	1	2	3
			£	£	£
Capital (brought forward)			00.00	+100.00	+100.00
plus: Contributions			+100.00	00.00	00.00
			+100.00	+100.00	+100.00
plus: Earnings (10 per cent per annum)			+ 10.00	+ 10.00	+ 10.00
less: Distributions			- 10.00	- 10.00	-110.00
Capital (carried forward)			+100.00	+100.00	00.00
Firm B		Year	1	2	3
			£	£	£
Capital (brought forward)			00.00	+110.00	+122.00
plus: Contributions			+100.00	00.00	00.00
			+100.00	+110.00	+122.00
plus: Earnings (20 per cent per annum)			+ 20.00	+ 22.00	+ 24.40
less: Distributions			- 10.00	- 10.00	-146.40
Capital (carried forward)			+110.00	+122.00	00.00

link between funds and value, provides a check on the reliability of the estimates. For, if the rate turns out to be incorrect, funds and value diverge. The segregated system of funds and value accounting is illustrated in Table 4. For the sake of simplicity it is assumed that by the end of the second period all assets are realised

in the form of funds. The figures in the first two columns of Table 4 are assumed, and the figures in all the other columns are derived from them. If the investment rate is estimated correctly, the accumulation of capital plus retained earnings is exactly equal to the stock of funds at the end of the second period.

TABLE 3

Capital adjustment as a result of revision of the investment rate
Published accounts

	Year	1	2	3	4	Revision	5	6
		£	£	£	£	£	£	£
Capital (brought forward)		00.00	+100.00	+100.00	+150.00	+150.00	-150.00	+150.00
plus: Contributions		+100.00	00.00	+ 50.00	00.00		00.00	00.00
		+100.00	+100.00	+150.00	+150.00		-150.00	+150.00
Capital Adjustment						- 11.38	- 11.38	
							+138.62	
plus: Earnings (current estimate)		+ 12.00	+ 12.00	+ 18.00	+ 18.00		+ 13.86	+ 15.00
less: Distributions		- 12.00	- 12.00	- 18.00	- 18.00		- 2.48	- 15.00
Capital (carried forward)		+100.00	+100.00	+150.00	+150.00		+150.00	+150.00
Revised computation								
Capital (brought forward)		00.00	+ 98.00	+ 95.80	+142.38	+138.62		
plus: Contributions		+100.00	00.00	+ 50.00	00.00			
		+100.00	+ 98.00	+145.80	+142.38			
plus: Earnings (revised estimate)		+ 10.00	+ 9.80	+ 14.58	+ 14.24			
less: Distributions		- 12.00	- 12.00	- 18.00	- 18.00			
Capital (carried forward)		+ 98.00	+ 95.80	+142.38	+138.62			

TABLE 4

The segregated system of funds and value accounting

FUNDS					INVEST- MENT RATE	VALUE		
Period						Revenue	Capital	
(t)	(1) Funds flow non- investors [given]	(2) Funds flow investors [given]	(3) Net funds flow [(1)+(2)]	(4) Funds stock [Cumula- tion of (3)]	(5) [Rate of return in (2)]	(6) Earnings [(5) × (8) at (t-1)]	(7) Net in- vestment [(2)+(6)]	(8) Accumula- tion [Cumula- tion of (7)]
	£	£	£	£	%	£	£	£
Distribution	0	-80.00	+100.00	+20.00	+ 20.00	10	00.00	+100.00
of	1	+30.00	- 10.00	+20.00	+ 40.00	10	+10.00	+100.00
earnings	2	+70.00	- 10.00	+60.00	+100.00	10	+10.00	+100.00
Retention	0	-80.00	+100.00	+20.00	+ 20.00	10	00.00	+100.00
of	1	+30.00	00.00	+30.00	+ 50.00	10	+10.00	+110.00
earnings	2	+71.00	00.00	+71.00	+121.00	10	+11.00	+121.00
Revision	0	-80.00	+100.00	+20.00	+ 20.00	20	00.00	+100.00
of	1	+60.00	- 20.00	+40.00	+ 60.00	20	+20.00	+100.00
rate	2	+39.00	00.00	+39.00	+ 99.00	10	{ -1.00 + 9 }	+ 99.00

This is so in the first two cases in Table 4. In the third case, however, the investment rate has to be revised from the initial estimate of 20 per cent per period to the ultimately correct rate of 10 per cent per period.

Management and the Auditor – a question of public accountability

The investor, who entrusts control over resources to management, is entitled to a statement of intention from management on how that control is to be exercised and to an independent report from the auditor on how far those intentions have been carried out. The segregation of funds and value follows the division of responsibility between the auditor and management. Management is responsible for the value reports which are based on estimates of the future. The auditor is responsible for the funds reports which are based on records of the past. If the estimates are not confirmed by the audited reports, management can be called to account.

The auditor is relieved of the burden of having to certify accounts incorporating asset valuations which depend on the outcome of future transactions. His responsibility is limited to the verification of claims which have arisen as a result of transactions which have actually taken place. Management, on the other hand, becomes publicly accountable for the efficient use of the resources under its control.¹⁸ If management's estimate of the investment rate is used as the basis of accounting for value, the computation of capital plus retained earnings is by implication management's valuation as a going concern of the net assets in which investors own the equity, and requires justification by reference to the earning capacity of those assets.¹⁹ If publication of the investment rate is accompanied by a projection for at least a year ahead of the estimated funds flows on which the rate is based, managerial performance can be monitored continuously by comparison of the published estimates with the audited results. Discrepancies require an explanation from management. The prospect of this type of efficiency audit may act as a stimulus to improve managerial efficiency.²⁰ Failure of performance

to match expectations would be clearly revealed as a question of management and not of accounting.

The Significance of the Investment Rate

The investment rate does not represent the rate of return which the investor derives from his investment. That depends on the price at which he buys and the price at which he sells. Nor does the value of capital calculated on the basis of the investment rate represent the value of the investment to the investor.²¹ That depends on his assessment of and preference for the associated degree of risk and liquidity and also on the alternative opportunities available. Like the nominal rate of interest on a fixed interest security, the investment rate does not indicate what the packet is worth, but it does at least describe what the packet contains.

The investment rate does, however, represent the effective rate of return earned by management on the resources under its control. Publication of the expected rate is therefore a declaration of how effectively management anticipates that it can use those resources. It is in the nature of a prospectus for the guidance of investors. For it is a description of the potential of the firm to the investor, which is expressed in the same terms as the return on other forms of investment.²² It may be that investment in the equity of business enterprises is subject to a higher degree of risk than investments in which the capital or interest are fixed by contract. Nevertheless, if management publishes its estimate of the investment rate based on the rate at which it expects to maintain the flow of distributions to investors, the investor is in a position to choose between alternative investments according to his preferences for risk and liquidity. He can decide for himself whether the return justifies the risk.

Accounting is a major source of economic information about the activities of business organisations. If expectations are not fulfilled, capital resources are liable to be misdirected, whatever the system of

¹⁸ For the reasons given in footnote 1 above, conventional accounts are relevant for reporting on the honesty of managers and employees but not for reporting on their efficiency.

¹⁹ Where conventional accounts are prepared, any difference between the balance sheet value of the firm and management's going concern valuation represents management's estimate of goodwill.

²⁰ See L. R. Amey, *The Efficiency of Business Enterprises*, London: Allen and Unwin, 1969. The danger of manipulation is reduced by the fact that the level of achievement can be raised falsely only by lowering the level of aspiration, and vice versa.

²¹ For an investor whose subjective rate of time preference happens to be exactly equal to the investment rate, capital and earnings calculated on this basis are the same as capital and income according to the Hicksian definition (see J. R. Hicks, *Value and Capital*, Oxford: Oxford University Press, 1939, 2nd edition 1946, ch. 14). This, however, is an exceptional case. Maximisation of the investment rate is not, therefore, a general prescription for maximising the satisfaction of the investor. Disclosure of the investment rate, on the other hand, may provide information to guide the investor in maximising his satisfaction in accordance with his subjective preferences – in particular, his time preference, and his attitude to and assessment of risk and uncertainty.

²² Publication of the investment rate would therefore make the return on investment in the equity of business enterprises comparable with the return on investment in banks, building societies, national savings, government securities, local authority and industrial loans, etc.

accounting. If, on the other hand, expectations are fulfilled, the investment rate is an exact description of the effective rate of return earned by management on the resources invested in the firm, whereas the accounting return is not.²³ Yet the segregated system contains nothing that is not either explicit or implicit in the conventional system.²⁴ It merely disentangles estimates of value from records of transactions. Nevertheless there are advantages which may be expected to follow from the segregation of funds and value. They are a clearer division of responsibility

between management and the auditor and an increase in the relevance of accounting information for allocating resources between business firms.

²³ Even if the accountant is gifted with sufficient foresight to implement the conventional system without the need for retrospective adjustments, the accounting return still depends on the arbitrary allocation of expenditure between capital and revenue. In the first two cases of Table 4, for example, the accounting return would reflect the 10 per cent effective rate of return only by coincidence.

²⁴ The argument that conventional asset valuations are estimates by implication has been advanced above.

A Business Economics Foundation for Accounting: The Dutch Experience

George M. Scott

Several articles about Dutch replacement value accounting and written by Dutch accountants have appeared in English language academic journals in recent years.¹ The authors of these articles usually imply that Dutch accounting is highly rationalised and is entirely consonant with its economic and social environment; and that, as a consequence, it provides services to companies and to society which are not conferred to the same degree by accounting elsewhere. Van Severter, for example, comments that 'The accomplishments in the Netherlands, specifically in income accounting theory, during the last forty-five years have proved that a systematic body of accounting theory, consistent with and specialised from economics, can be developed'.²

The descriptions provided by Dutch accountants are consistent with respect to the discipline of business economics serving as the basis for Dutch accounting and about the merits of their approach to accounting. Considering this, more thorough and widespread consideration of Dutch accounting by scholars in other countries than has occurred in the past seems warranted.

It is possible that the general lack of interest in and enthusiasm for Dutch accounting outside of the Netherlands is in major part because the business economics based Dutch accounting is so fundamentally different from other accounting that its full implications for the business community and society are not readily apparent. It is the purpose of this article to present the business economics approach to accounting as used by the Dutch and described by Dutch accountants, and to explore the aforementioned implications.

¹ Certain of these articles are referenced at appropriate points in this paper.

² A. Van Severter, 'The Continuity Postulate in the Dutch Theory of Income', *The International Journal of Accounting Education & Research*, Vol. 4, No. 2, Spring 1969, page 1. Van Severter is a Dutch accounting scholar presently residing in the United States.

Dutch accounting – a summary

To contrast Dutch accounting more sharply with our own it is useful to begin with a brief summarisation of what Dutch accountants consider to be the important characteristics of their accounting. Dutch authors portray their accounting as a composite of several characteristics. The most important, and one which appears to have greatly influenced all facets of Dutch accounting, is that the principles of business economics are developed and interpreted by Dutch accountants as practical guides for accounting and auditing. Purportedly, accounting and financial reporting practices are therefore unfettered by accounting conventions and are constrained only by the principles of business economics and by the Dutch auditors' role in seeing that these principles are considered. The Dutch consider that use of replacement values derives from interpretation of the principles of business economics.

The principles of business economics as a foundation for Dutch accounting also appear to account for another attribute – the apparent existence of a conceptual and practical rapport among the three major functions of Dutch accountants. Perhaps to a greater extent than elsewhere these three functions of external reporting and auditing, internal reporting, and business advisory services appear to have achieved rapport and to have developed with about equal emphasis on each.

Another important characteristic is that Dutch accountants evidence a strong aversion to taxation as a determinant of accounting practice. As elsewhere Dutch fiscal authorities pay scant heed to accounting theory and to the probable impact of tax legislation on accounting practice. However, Dutch accountants have been persuasive in convincing companies that theoretically sound accounting practices should prevail over tax-influenced accounting practices, and that accounting practices therefore are not incorporated into formal business records if in conflict with

accounting theory. Perhaps partly as a result the Netherlands business community considers the accounting function to provide extremely useful information on which to base operating decisions.

In combination the characteristics outlined in the preceding paragraphs define an accounting structure and philosophy quite different from those extant elsewhere around the globe. Accounting in the United States, Canada, and most other nations, for example, is based more on actual business practices than on business economics, and accounting practice is highly constrained by 'generally accepted accounting principles', which include the historical cost principle. Again, in virtually all nations except the Netherlands tax laws have a strong direct or indirect influence on accounting practice. In other respects also, as will be seen, the Dutch consider their business economics based accounting to be different from and not inferior to that of other nations.

The years of development

The unique nature of the Dutch approach, which exists in a free-enterprise economic environment not essentially unlike our own, appears to be attributable to two major factors. The first is that Dutch accounting development has been primarily insular. Although the Netherlands Institute of Accountants (established in 1895) initially adopted with few changes the regulations of The Institute of Chartered Accountants in England and Wales, Dutch accounting has since been largely influenced by events and circumstances within the Netherlands.

The particular accounting philosophy which germinated in the Netherlands has been the other major influence on Dutch accounting. In fact the present circumstances of Dutch accounting appear to be in major part attributable to the ideas and philosophy of one accountant-educator, the late Professor Theodore Limperg.³

Limperg began his accounting career as a 21-year-old auditor in 1901, and pursued what today might be considered a 'systems' approach to accounting. That is, he was concerned not only with individual aspects of accounting, but also with ensuring that each aspect of accounting was conceptually linked and integrated with all other aspects as well as with the entire economic and social fabric of the Netherlands. Limperg's theory encompassed not only financial

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reporting and auditing, but also management information needs and the relationship of company accounting to regulation of the national economy.

With respect to auditing, Limperg was an early proponent of expanding audit scope far beyond what was usual a half-century ago. Limperg also believed in strict regulation of auditor proficiency and conduct and strict auditor independence so as to create confidence in audited statements, and he was instrumental in seeing that this view prevailed among his colleagues at an early stage in the Dutch profession's development. Additionally, at his urging the profession began providing extensive advisory services to management in order to increase demand for audit services.

Limperg was also an early proponent of current value measurements for external reporting and as a basis for management policy-making. He was convinced that the interests of investors and society necessitated auditors' satisfying themselves that company financial statements indicated the position and performance of companies in current rather than historical cost terms. Limperg also considered that accounting in terms of historical costs was responsible, at least in some measure, for the severity of economic cycles. He argued that during inflationary periods the exaggerated profits shown by historical cost accounting made credit for expansion too readily available, which resulted in increased over-investment and inflation perpetuation.

Limperg's views on accounting did not immediately prevail, however. His forceful pursuit of the goals of broadening the functions of auditing and using current values in accounting caused conflict with other leaders of the Netherlands Institute of Accountants. Limperg and loyal associates (many of whom were his former pupils) left that organisation to establish the rival Netherlands Accountants Association. Limperg's influence grew and in 1918 the two organisations merged with Limpergean ideas setting the conceptual pattern for the reorganised Netherlands Institute of Accountants. Limperg's influence is still pervasive in accounting in the Netherlands. That Dutch accounting theory seems to have few theoretical inconsistencies is generally acknowledged to be in large measure the result of his efforts.

Business economics as a foundation for accounting

The principles of business economics serve as the foundation for Dutch accounting. As Van Seventer states this, 'It is a fundamental premise of the "Amsterdam School" that the study of accounting should be integrated with the body of economic knowledge and methodology.'⁴

³ Much of the following biographical information about Professor Dr Theodore Limperg is from 'Theodore Limperg and His Theory of Values and Costs' (*Abacus*, September 1966) by Professor Dr Abram Mey. This writer gratefully acknowledges information provided by correspondence with Professor Dr Mey and used throughout this article. From 1949 to 1961 Professor Dr Mey occupied the Chair of Professor of Managerial Economics at the University of Amsterdam as successor to Professor Dr Limperg.

⁴ A. Van Seventer, *op. cit.*, p. 4.

However, the business economics on which Dutch accounting is based is not directly comparable to any discipline existing elsewhere. Attuned closely to the practical world of business and management, the Dutch version of business economics is an integration of empirical micro and macro economic observations with economic theory.

From a macro orientation the Dutch discipline examines the practical implications to a firm of its place in the entire economic and social fabric. The discipline also considers the effect of the actions of individual firms on the economy at various stages of the economic cycle, and on consumers and other members of society.

In a micro context Dutch business economics explores the relationships between technical and economic processes to find the effects of the acts of an organisation on its costs and revenues. As Van Seventer suggests, 'The purchase of an asset, the sale of inventory items, the borrowing of money, and the act of technical production all carry a cause in the past and an implication for the future.'⁵ The discipline then considers the measurement procedures necessary to evaluate the efficiency of management and to properly portray the results of the technical and economic process relationships.

Business economics in the Netherlands is a composite of several branches of economic theory. One is the theory of cost and value under which costs are considered to be the required and unavoidable sacrifices in the production of products. Sacrifices measured in physical terms and stated at replacement value generally constitute the value of product to the manufacturer.⁶ Expenditures for unnecessary or wasted resources (including excess capacity) are not unavoidable costs and so have no value. Since, unlike American accountants, Dutch accountants consider themselves to be valuers, rather than chroniclers of historical costs, they must undertake rigorous training in cost and value theory.

Related to cost and value theory in Dutch business economics is the theory of costs and returns which involves measurement of the economic efficiency of a firm by comparing the necessary sacrifices at each production centre with the economic returns to that centre. This comparison is considered useful to management and also provides the framework for external reporting in the Netherlands.

Another branch of the theory considers capital needs of organisations and relates internal characteristics of firms to circumstances of the market environment in which firms operate. This branch is concerned with the means available to firms to replenish

or expand their financial capital and considers the relationship of financing activity to economic fluctuations.

Also central to the business economics approach is organisation theory, dealing with the flows of human and other resources merging to produce differentiated products. The Dutch consider that industrial and administrative efficiency is explicable only in terms of the recognition and rationalisation of these flows.

Dutch replacement value accounting

The tenets of business economics have long held sway in Holland as the major influence on their accounting. Since economics is greatly concerned with valuation and income problems, it is natural that the attention of accountants in the Netherlands has come increasingly to concentrate on the question of whether or not conventional accounting methods of valuation and profit determination provide proper insight into the status of a business enterprise. From a premise of business economics, the Dutch consider that the answer can only be that current values (generally replacement values) provide more appropriate measures of financial position, income, and rates of return than does historical cost accounting.⁷

Replacement value theory

Use of replacement values is a logical outgrowth of Dutch accountants' business economics orientation. The effect of a business economics orientation in accounting is maintenance of invested capital in real as opposed to nominal (monetary) terms.⁸ Maintenance of invested capital is considered necessary to ensure continuity of production, to assure creditors' protection, and to properly evaluate and report the success and efficiency of firms' operations.

Primarily because of the economic phenomenon of changing prices (in general as well as for specific assets), the recording of transactions occurring between the firm and outsiders as well as within the firm at current values is requisite to evaluation of the extent of the maintenance of real capital. The use of replacement values to evaluate the real increase or decrease of capital is a process which may be characterised as follows. Assets are periodically restated to what the Dutch consider to be a proper value, that of the quantity of each of the resources composing

⁷ For a general description of the differences in income determination between replacement value and historical cost accounting, see L. S. Rosen, 'Replacement-Value Accounting', *The Accounting Review*, January 1967, pp. 106-113.

⁸ Van Seventer (*op. cit.*, p. 11) notes that this is not the emphasis of Limperg's theory, but that Limperg's theory is consistent with the maintenance of capital.

⁵ A. Van Seventer, *op. cit.*, p. 8.

⁶ *Ibid.*, pp. 7-10.

the asset multiplied by its per-unit current replacement value.⁹ In theory these assets include all fixed assets, finished inventory, and work in process, although, as will later be seen, practice does not in all cases conform to theory.

Adjustments corresponding to asset restatements are to the capital accounts, rather than to retained earnings where they would be construed as holding gains or losses. Dutch replacement value accounting does not encompass the concept of holding gains in inventories or other assets, a concept accepted by many theoretical accountants and perhaps argued most persuasively by Edwards and Bell.¹⁰ Instead, if assets have remaining productive value or must be replaced in kind or in productive or service capacity in order to continue operations (as is the normal case), then the increased value of the asset held over time is not considered to be a gain but rather to be an adjustment to the capital account to reflect the increased amount of capital now necessary to maintain operations at their present level. In Dutch theory this is so whether the market value change is attributable to general price changes, or to a change in the value of the specific asset relative to other goods and services.

After having restated assets (and, in consequence, the capital account), the restated value of the assets consumed in the securing of revenue of the period is set against that revenue. This use of replacement values for income determination permits calculation of an approximation of 'economic income'; that is, an income that business economics theory considers to be the most acceptable surrogate for the unmeasurable economic income ideal derived from the concept of the present value of the future cash flows of the firm's resources.¹¹ That use of replacement values is thought to be the most acceptable of the income determination alternatives stems from their use providing a reasonable approximation of economic income as well as from replacement values having the property of usually being amenable to reasonably objective measurement. The use of replacement

values ensures that current costs (including depreciation, which is restated to a current cost basis) are matched to current revenues in the determination of income.

In the articulation of the financial statements income so determined increments (decrements) total capital as an increase (decrease) of retained earnings. This completes the adjustment of the capital and retained earnings accounts to a current basis and permits evaluation of whether the capital of the company has been maintained, increased, or eroded. Further, the elements of total capital change have been separated to indicate the portion of change required to provide for the continuance of the enterprise at its present level of operations (capital maintenance), and the portion which represents the change brought about from successful or unsuccessful operations. Managers and owners are then in a position to predicate their resource allocations and other decisions on more informed analyses. Also, directors of the company are more fully aware of the implications of dividend decisions for long-run operations and are in a position to make prudent analyses of the propriety of distributions of this nature.

The benefits conferred by replacement value accounting can be seen to include not only a more proper determination of income and valuation of assets and capital, but also to extend to the many evaluative techniques utilising relationships which include one or more of these factors. As one example, a commonly used measure of operating efficiency and success is the return on total resources employed in the generation of revenues. This return is determined by finding the percentage of income to total resources. During periods of rising prices conventional accounting severely distorts this calculation because income (the numerator) is overstated to the extent that older and lower costs are not indicative of the actual sacrifices (the current cost of goods) made to generate current revenues, and the asset base (denominator) is understated by being stated at the lower historical costs. The net effect can be gross exaggeration of return on productive resources but, because of the interaction of the several variables (e.g. the relative proportions of very old and almost-current costs) the extent of this exaggeration in a given case is far from being intuitively obvious. It is fair to say that, whatever the extent of exaggeration, it promotes widespread misunderstanding of profitability, and that this misunderstanding has both social and economic consequences.

Further problems are caused if assets in different segments of a firm are acquired at different points in time or if assets of the entire firm are acquired at a different time than are assets of another firm. To the

⁹ Some writers sympathetic to current values question the propriety of stating assets at their replacement value, which is an 'entrance value'. For example, Chambers advocates 'cash equivalents', which are 'exit values' in the nature of market resale prices. Raymond J. Chambers, *Accounting, Evaluation and Economic Behavior* (Englewood Cliffs: Prentice-Hall, Inc., 1966).

¹⁰ Edgar O. Edwards and Philip W. Bell, *The Theory and Measurement of Business Income* (Berkeley: University of California Press, 1961).

¹¹ For accounting purposes, Dutch economic income is 'The income which may be spent without trespassing on the capital of the business, which is the source of income'. A. Goudekot, 'Fluctuating Price Levels in Relation to Accounts', *Proceedings of the Sixth International Congress of Accountants*, London, 1952, p. 74.

extent that this occurs comparability of profitability and operating efficiency, if determined according to conventional historical cost methods, is made difficult. This may cause unwise allocation by management of resources within a firm or by investors of their resources between firms. Managers, owners, and other interested parties are not only unable quantitatively to assess the extent and effects of this non-comparability but may also in varying degrees be unaware of the lack of comparability. They may therefore be unable to make even subjective adjustments to compensate for the lack of objective comparability resulting from conventional accounting.

The Dutch consider that operating efficiency is properly measured and comparability within and between firms is achieved by comparing net income computed on a replacement value basis with the total replacement value of resources employed in the generation of that income. This is because, to the Dutch, the best determination of the value of resources sacrificed as well as the value of total resources employed in the generation of revenues is their replacement value.

Replacement values in practice

Dutch accounting is unusual in that replacement values are commonly used in practice. However, Dutch accounting is unique in that the use of replacement values is considered to be the most acceptable accounting practice for external reporting and are readily attested to by Dutch auditors. Although replacement and other current values are occasionally encountered in other nations for internal and external reporting, it is only in the Netherlands that current value statements are encouraged even in periods of negligible inflation, and attestation of these statements is routine.¹² Furthermore, it is only in Dutch companies that current value adjustments are recorded in the detailed accounts to provide information for management at all levels, instead of having only the final, company-wide financial statements adjusted.

By no means have all Dutch firms adopted current value accounting and reporting practices. But many Dutch firms (and particularly the larger firms) do use current values for both financial and managerial reporting.¹³ There are also many Dutch firms which apply current values to only some categories of their

accounts. In general, the smaller the firm the less likely that it will use current values throughout.

It can be ventured that, although replacement values probably are not presently used by the majority of the medium and large size Dutch companies, there is the likelihood that this will eventually be the case, since 'replacement value theory . . . is now accepted by the majority of the theorists and practicing accountants in the Netherlands'.¹⁴ Dutch firms using replacement values do so even for periods when the general price level does not change, since prices of specific assets still vary.

In their application of replacement value theory, Dutch firms take the very pragmatic approach of substituting an estimate of replacement value if replacement value is not readily ascertainable. Values determined by specific price indexes are most frequently substituted, and individual firms often devise their own price indexes or other measurement techniques on an *ad hoc* basis after consultation with their auditors.¹⁵

External Reporting in the Netherlands

Dutch firms, at least the larger ones, are regarded as among the most progressive in external financial reporting. The Dutch public accounting profession takes credit for having been very effective in showing Dutch companies the advantages which accrue to thorough and realistic disclosure of financial affairs.

Dutch auditors and accountants appear to have created a pervasive, positive attitude toward accounting among all elements of the business community. They have convinced businessmen that accounting is a key to sound management as well as to sound investment. It was in this positive spirit that a Committee of the Netherlands Employers' Association met in 1955 to establish recommended concepts and standards for external reporting. Van Vlerken summarises the most important of these:

'1. Income must be specified so that return on capital can be assembled; 2. Assets and liabilities must be specified so that insight is obtained into solvency and liquidity; 3. Bases for valuation and income determination must be stated, as well as changes thereto and their effects, and; 4. Replacement value accounting is strongly recommended.'¹⁶

¹⁴ A. Van Severter, *op. cit.*, p. 2.

¹² Appendices D and E of *Accounting Research Study No. 6: Reporting the Financial Effects of Price Level Changes* (by the Staff of the American Institute of CPAs; New York: AICPA 1963) examine several cases involving adjustments of financial statements for price changes.

¹³ For an example of replacement value accounting used in Philips Gloeilampenfabrieken see A. Goudekot, 'An Application of Replacement Value Theory', *The Journal of Accountancy*, July 1960, pp. 37-47.

¹⁵ Tritschler examines the methodology involved in construction of specific price indexes and concludes that 'use of the firm's own probabilistic indexes offers . . . methodological advances in accounting measurement'. Charles A. Tritschler, 'Statistical Criteria for Asset Valuation by Specific Price Index', *The Accounting Review*, January 1969, pp. 99-123.

¹⁶ J. H. M. Van Vlerken, 'Financial Reporting in Holland', *Canadian Chartered Accountant*, November 1965, pp. 345-6.

The Committee which drew up these standards consisted of entrepreneurs, stock exchange experts, bankers, financial journalists and auditors. This report and a 1963 revision have influenced present accounting in the Netherlands even though there is no effective machinery to ensure compliance with the recommendations of the report.

Legislation relating to financial reporting in Holland has always been permissive, even bordering on the non-existent. One result of the minimal legal regulation of accounting in the Netherlands is that even though the best of external reporting is very good indeed, not all firms publishing financial statements follow accounting practices which would meet legally prescribed minima for firms in comparable situations in America. Van Amerongen has commented that 'Freedom is good for the strong, and in Dutch accounting they have come a long way . . .' but that for the 'weaker brethren' some sort of legal regulation of accounting would be helpful.¹⁷

Reporting principles

The Dutch auditing profession has emphasised that accounting and external reporting be based on the principles of business economics which have been outlined in preceding sections of this article. The Dutch appear to have no concept that is analogous to 'generally accepted accounting principles', for there are almost no binding Dutch accounting conventions other than those of double-entry and accrual accounting. The Dutch lack of accounting conventions constitutes one of the fundamental differences between their accounting and reporting and that extant in other highly developed nations.

Dutch accountants' primary objective is to portray the economic significance of events. Since strictly defined 'rules' analogous to generally accepted accounting principles are not used, any portrayal is proper if it reflects the economic sense of events. There is an infinity of different economic events, and so there is also considerable diversity of Dutch reporting practices. The educational requirements for Dutch accountants and auditors, which appear to lay heavy stress on training in economic theory, seem designed to impart to these persons the judgement necessary to select the accounting procedure appropriate to the circumstances.

Differences of principles

It is interesting to compare Dutch and American accounting principles in certain respects and to consider the possible effects of differences on financial reporting and on the receptivity of American account-

ants to replacement value accounting. A fundamental difference in application between the American and Dutch approaches to accounting may be inherent in the fact that the exercise of judgement on the part of American accountants is sometimes limited to the selection of one of perhaps several alternative 'generally accepted accounting principles'. These principles need not be grounded in business economics; some accounting principles, such as LIFO for example, are generally accepted because they effect income tax savings. To the extent that accountants sense accounting conventions to be only arbitrary rules with no economic rationale, they are probably the more inclined to permit the adoption of whichever accounting alternative portrays the most favourable results, irrespective of the true economic circumstances.

The Dutch however, claim to test their judgement against the substantive principles of business economics and so attempt realistically to portray economic events and status. Dutch accountants insist that the multiplicity of permissible practices does not give them licence to choose capriciously, but that instead they are professionally committed to search for or even devise an appropriate accounting practice for a particular transaction or situation. Theoretically this means that Dutch accounting is continually in evolution because accountants are continually recommitted to analysis of changing circumstances.

An apparent by-product of Dutch attempts to accurately portray economic reality is that Dutch accountants have effected a nearly complete separation of business accounting and tax accounting. Van Amerongen notes that in the Netherlands 'at an early stage accounting . . . did not let its development be hampered by the rules laid down by the tax authorities for the calculation of fiscal profit or loss'.¹⁸ This expurgation of tax rules from business accounting undoubtedly contributes to the utility of accounting for economic decision-making.¹⁹

To understand Dutch accounting and financial reporting it is necessary to realise that, even though the use of replacement values is increasingly being accepted by the Dutch as the major tenet of their accounting, replacement values are in fact the *result* of an approach to accounting which rests solidly on business economics. The failure to see that it is from within a context of business economics that replacement values are logical provides an important indica-

¹⁷ Van Amerongen, *op. cit.*, June 1963, p. 499.

¹⁸ Solomons reminds us that 'many [American] companies are paying a substantial, though concealed, price for tax savings when, in pursuit of these savings, they adopt accounting methods which do not serve the needs of management and may even positively mislead it'. David Solomons, *Divisional Performance: Measurement and Control* (Homewood, Ill.: Richard D. Irwin, Inc., 1965), p. x.

¹⁹ F. Van Amerongen, 'Dutch Accounts', *Accountancy*, June 1963, p. 497.

tion of why British and American accountants are not enthusiastic about replacement value accounting. They do not view business economics and replacement values as a possible *substitute* for generally accepted accounting principles. Rather, they view replacement values as possibly an *additional* generally accepted accounting principle. In this context replacement-values seem inconsistent and incompatible with many present accounting principles and with much of the framework of British and American accounting.

British and American accountants' inclination to view accounting as a separate discipline only casually related to economics probably accounts for their tending to be more favourably disposed toward adjustments for general rather than specific price level changes.²⁰ General price level adjustments update historical costs (which are a part of their accounting heritage) while replacement values (specific price level indices) constitute valuation and therefore are completely alien to the heritage of British and American accountants.

Internal reporting

Internal reporting is well developed in large Dutch firms. The Dutch approach to internal reporting is also conditioned by and predicated on business economics, for Breck tells us that '... the same economic principles should be applied in external as in internal accounting'.²¹ Business economics thus provides a conceptual link between internal and external reporting that has not been developed to the same degree in other nations.

One of the practical implications of this link is that the education and training of accountants for companies and for auditing has long been essentially the same in the Netherlands. Another is that replacement values are as widely used for internal as for external accounting. Goudekot has noted that with internal use of replacement values at all levels in Philips Gloeilampenfabrieken 'a more appropriate basis for policy decisions is created and that is of tremendous value'.²²

Management advisory services by auditors

Since Limperg's ideas on auditing gained in credence in the first quarter of this century, provision of advisory services to management has been one of the

major functions of Dutch auditors. Never since have auditors thought themselves to be ethically restrained from this activity. Because their responsibility has been so broadly defined as to include advisory services to management, Dutch auditors have entirely avoided the unfortunate circumstance of American auditors who only in recent years have begun to provide extensive advisory services to clients.

Advisory services provided as a normal part of an audit apparently still tend to be broader in some respects in the Netherlands than in the United States. In addition to consulting on normal problems of business operation, Dutch auditors are expected to exercise a controlling function on *behalf* of management – a function of assuring management that data on which management bases decisions are accurate and, at the same time, of verifying that management's policies have in fact been carried out.

Parenthetically, it is interesting that at a time when the professions of other nations are newly expanding into management consulting, there are indications that Dutch public accountants are beginning to delegate detailed tax consulting work to 'independent tax consultants who usually are not qualified accountants and whose training has been entirely different'.²³ This development is probably to be expected, since emphasis in the training of Dutch auditors is increasingly on business economics, which has little relevance to taxation because tax laws are based on fiscal and social needs rather than business economics.

Auditors in the Netherlands are expected to be well-versed in management techniques. Business economics is a discipline essential for the development of these techniques as well as for other skills necessary for business advising. Since business economics is also the foundation for internal and external reporting there is therefore a high degree of overlap between the training necessary for these functions, for auditing, and for business advising. It seems a happy circumstance for the Dutch that the discipline of business economics appears to serve to unify and integrate all of the accounting functions in the Netherlands as well as to integrate these functions into their micro and macro economic environment.

Conclusions

To attempt a definitive evaluation of the Dutch experience with business economics as the foundation for accounting on the basis of the limited information currently available in the English language would not be appropriate. Instead, this article has attempted to summarise the business economics approach to accounting and to set forth the distinctive aspects of

²⁰ For a discussion of the disposition of American accountants toward general price level adjustments, see Graham Pierson, 'Three Kinds of Adjustments for Price Changes', *The Accounting Review*, October 1966, pp. 734-5.

²¹ P. C. Breck, 'Some Principles of Business Economics', *The New Horizons of Accounting*, Ninth International Congress of Accountants, Paris, 1967, p. 188.

²² A. Goudekot, 'An Application of Replacement Value Theory', *op. cit.*, p. 47.

²³ *The Canadian Chartered Accountant*, January 1966, p. 52.

Dutch accounting as seen by Dutch accountants. This portrayal is attempted primarily by synthesising the published views of Dutch authors.

Dutch accounting is likely to remain something of an enigma to American accountants. Yet a coherent picture is beginning to emerge, and there is reason to believe that the replacement value accounting which many think to be the only distinctive characteristic of Dutch accounting is but one manifestation of an impressively different organisation of accounting. The Dutch, by using business economics as a foundation, appear to have developed a cohesive and completely integrated accounting philosophy and

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structure which is entirely at ease in its business and social environment, and within which replacement values constitute a natural and logical means of economic valuation.

There remain many unanswered questions about accounting in the Netherlands, particularly with respect to application of replacement values and the extent to which alleged benefits of business economics accounting are actually realised in practice. These, as well as other intriguing questions, certainly warrant additional attention to Dutch accounting on the part of American accounting practitioners and scholars.

Footnote

by Drs. J. W. Schoonderbeek

Professor Scott mentions, *inter alia*, the recommendations of committees of the Netherlands Employers' Association, published in 1955 and in 1962, with regard to standards for external reporting.

These recommendations were in conformity with the insights and opinions of the Dutch accountancy profession.

They formed the basis for legislation on financial reporting, enacted by the Dutch Government in 1970. This Act containing statutory regulations concerning the annual accounts of enterprises, will apply for the first time to annual accounts ending 1 May 1971 and later.

The Act contains in Part I general provisions, in Part II further provisions concerning the balance sheet and explanatory notes, and in Part III further provisions concerning the profit and loss account and explanatory notes. Most important is Part I, giving the basic philosophy regarding the annual accounts. The main points are laid down in Sections 2-6:

Section 2:

The annual accounts provide such information that a sound opinion can be formed on the financial position and results of the enterprise and, to the extent to which annual accounts permit, on its solvency and liquidity.

Section 3:

1. The balance sheet, together with the explanatory notes, reflects fairly and systematically the size and composition of the capital of the enterprise at the end of the financial year.

2. The profit and loss account, together with the explanatory notes, reflects fairly and systematically the size and composition of the results of the enterprise for the financial year.

Section 4:

The combining, analysing and classifying of the data in the annual accounts, are aimed at giving the information that, by virtue of section 2, is to be provided by the annual accounts. In doing so the provisions of the Parts II and III are adhered to in all cases, unless this would result in showing separately items which are immaterial in the context of the annual accounts. The corresponding figures for the previous year are included in the annual accounts.

Section 5:

1. The bases underlying the valuation of the assets and liabilities and the determination of the result comply with standards that are regarded as being acceptable in economic and social life.

2. The explanatory notes give an exposition of these bases.

3. If an alteration of the bases is of essential significance, such alteration is explicitly stated, showing its effects on the net equity and the results.

Section 6:

To the extent to which it is required for ensuring a fair picture of the composition of the enterprise's financial position and results, reserves and movements therein are separately stated and explained in the annual accounts.

As appears from the quoted sections the primary object of the legal regulations is to attain a fair and systematic view of the size and composition of the enterprise's capital and results in the annual accounts. Whereas the mentioned employers-committees recommended replacement value accounting, the law does not give any direct prescription regarding the valuation base. The law restricts itself to the requirements that the bases of valuation and determination of

results comply with standards that are regarded as being acceptable by the business community, and that an exposition of these bases and the effect of changes in the bases are given in the explanatory notes.

The question remains which standards will be regarded as being acceptable in economic and social life. In conformity with the expectations of the Government, expressed during the preparation of the law, a committee of the Netherlands Institute of Registered Accountants (N.I. v R.A.) is engaged – in close relation with representatives of associations of

employers and of employees – in a critical stock-taking of the standards of valuation in use in business life. The results of the studies of this committee will be published and will of course determine the future trend in the valuation-bases used in financial reporting. It is certain that accounting standards, based on current or actual values, will remain of great importance in Dutch practice in internal and external reporting on accounts, for there is no change in the business economics approach of Dutch auditors and accountants.

Goodwill

An Example of Will-o'-the-Wisp Accounting

T. A. Lee

Introduction

Over the last eighty years or so, goodwill has been the subject of a controversial debate which has failed to produce a consensus of opinion regarding its accounting treatment. The debate was started by a Scottish Chartered Accountant, Francis More, in 1891 (when he defined goodwill as the present value of business profits in excess of a normal rate of return), and it has been continued over the years by such eminent accountants as Lawrence R. Dicksee, Henry Rand Hatfield, P. D. Leake, William A. Paton, George O. May, and more recently, by Leonard Spacek.¹

To date in this country, despite the obvious interest of individual practitioners in the subject, there has been no definitive statement on goodwill as such from the professional bodies. By way of contrast, the American Institute of Certified Public Accountants has commented on the treatment of goodwill in its Accounting Research Bulletin No. 43 (1962 revision), *Intangible Assets*, and through its Accounting Principles Board, it has also published Accounting Research Study No. 10 (1968), *Accounting for Goodwill*, and Accounting Principles Board Opinion No. 17 (1970), *Intangible Assets*.

The purpose of this paper is to examine the main characteristics of goodwill which affect its accounting treatment, and hopefully, to offer some suggestions which may help to bring greater uniformity to present practices.

Goodwill and business combinations

The problem of accounting for goodwill normally arises in practice at the present time, only when there is a combining of two or more business enterprises by means of takeover or merger. As Spacek² has observed:

¹ For a discussion of the earliest writings on goodwill, readers are referred to Bryan V. Carsberg, 'The Contribution of P. D. Leake to the Theory of Goodwill Valuation', *Journal of Accounting Research*, Spring 1966, pp. 1-15.

² Leonard Spacek, 'The Treatment of Goodwill in the Corporate Balance Sheet', *The Journal of Accountancy*, February 1964, p. 35.

'Goodwill exists in every business, but it becomes an accounting issue only when we have an acquisition of one business by another.'

Because goodwill is frequently part of the total valuation placed on a business for takeover or merger purposes, accountants have the task of accounting for that part of the total purchase cost which is attributable to goodwill. The Companies Act 1967 (Schedule 2, paragraph 8(1)(b)) provides for the disclosure of the allocated cost of goodwill in company balance sheets — goodwill, patents and trade marks being aggregable for disclosure purposes at their net book value. The Act, however, gives no indication of where goodwill should be presented in the balance sheet (that is, whether it should be treated as a fixed, current or 'other' asset). The effect of this lack of definition can be seen from a scrutiny of current company accounts. For example, in six recently published reports of public companies, the following differing treatments and descriptions of goodwill were given:

1. Goodwill shown as a fixed asset; original cost and aggregate depreciation to date being disclosed separately, giving a net book value of £1.

2. Goodwill, representing 2½ per cent of total assets, shown as a separate asset between fixed and current assets, with the following note attached:

'Goodwill arises where, on the acquisition of a business, the price exceeds the value attributed to the net assets taken over. Except for that which arose on the acquisition of XY Ltd, all goodwill has been charged against reserves.'

3. Goodwill, representing over 20 per cent of other assets, shown as a deduction from capital reserves.

4. Goodwill, representing 17 per cent of net assets, shown as a separate asset, and described as representing

'the excess of the cost of shares in subsidiary companies over the book value of their net tangible assets at the dates of acquisition.'

5. Goodwill, representing 30 per cent of net assets, shown as a separate asset, and described in the

following manner:

'Goodwill is stated at cost, having arisen mainly from the excess of the cost of shares in subsidiaries over the value attributed to their net tangible assets at the dates on which the subsidiaries were acquired.'

6. Goodwill, representing 8 per cent of net assets, shown as a separate asset, no supporting description or explanation being offered.

In Britain, business combinations are generally accounted for at a 'fair' valuation – that is, the acquired assets, etc., are recorded at their agreed take-over or merger values. This means that goodwill is accounted for as representing the excess amount paid for a business over and above the fair value of all its separable assets, less any liabilities also assumed. In America, on the other hand, the problem of accounting for goodwill is one of the reasons for the development of 'pooling of interests' accounting. This method states that where there is no substantial change in ownership following a business combination, the takeover or merger is accounted for entirely at the existing book values, irrespective of the valuations agreed upon in arriving at the purchase consideration. This results in goodwill, and the problem of its accounting treatment, being ignored completely.³ At present, there is considerable debate going on in America concerning the validity of pooling accounting, and the need for more acceptable guidelines governing its application in practice.⁴ As pooling accounting does not appear to be as widely adopted in this country, it follows that the question of accounting for goodwill is not one which is being ignored by British accountants. It follows, therefore, that the goodwill problem is one which should be looked at a little more closely than hitherto.

Goodwill and profits

There appears to be a general acceptance by writers on goodwill that, in some way, its existence is directly related to the profit level of the business entity it is being attributed to – that is, that the value of goodwill is dependent on the level of profit earned, or about to be earned, by the business. This appears to be a rational supposition for the value of the business as a whole is clearly acknowledged as being dependent on its profitability. A general criterion has been established which stipulates that goodwill exists only if the earning power or profitability of the business is above

an accepted normal level. From this basis, phrases such as 'superior earnings', 'excess profits', and 'super profits' have evolved. Spacek has summarised this relationship between goodwill and profits as follows:

'Goodwill is the present value placed on anticipated future earnings in excess of a reasonable return on producing assets. Thus, it is the cost to the buyer of earnings over and above the cost of the assets required to produce these earnings.'⁵

Originally, goodwill was regarded by accountants as an asset in its own right, and it was valued accordingly. Total business profits were divided between normal profits and super profits, and goodwill was valued at so many years' purchase of allotted super profits. This approach totally ignored the fact that the value of goodwill is entirely dependent on the business as a going concern, with all of its assets interacting and combining with one another to earn the overall profits. As a refinement to this early conception of goodwill, several accountants, including Leake, advocated the treatment of each annual super profit as an annuity, with the discounting of each such segment of profit at a reasonable rate of interest, in order to arrive at the present value of several years' super profits. The summation of these present values was regarded as the value of goodwill. However, this again ignored the concept of a business as a going concern.

Gradually, however, it was realised that the division of total business profits between one group of assets and another was too artificial and too subjective, with the result that goodwill is now valued as part of the business as a whole. As Hendriksen has pointed out:

'Tangible assets may have value in their specific use because of imperfect competition and changes in demand for the products as well as efficient utilisation. All factors interact in the production of the final service or product and in permitting cash distributions to stockholders. Any attempt to allocate a portion of the total value of a firm on the basis of the capitalisation of superior earnings is, therefore, artificial.'⁶

Anticipated profits are calculated, and are either capitalised, or discounted to present values, at a reasonable rate of return. Fair valuations are given to the tangible, and if possible, certain of the intangible assets being acquired. Goodwill is then the difference between the total purchase consideration and the total of the fair values attributed to the net assets taken over.

To quote Spacek again:

³ For a further discussion of the merits of purchase v. pooling accounting, see Arthur Wyatt, 'A Critical Study of Accounting for Business Combinations', *Accounting Research Study No. 5*, 1965, AICPA.

⁴ The most recent statement on pooling guidelines is contained in 'Business Combinations', *APB Opinion No. 16*, reproduced in *The Journal of Accountancy*, October 1970, pp. 69–84.

⁵ Leonard Spacek, 'The Treatment of Goodwill in the Balance Sheet', in *A Search for Fairness in Financial Reporting to the Public*, Arthur Andersen & Co, 1969, p. 297.

⁶ Eldon S. Hendriksen, *Accounting Theory*, Irwin, revised edition 1970, p. 434.

'In simple language, goodwill is the valuation placed on the earning power of the going concern as a whole over the amounts paid for the net assets necessary to produce, market, sell and administer its products and services.'⁷

Nevertheless, this having been said, the first road-block concerning goodwill is met – the basic confusion between the nature of goodwill and its valuation. Goodwill is not simply a valuation, no more than land or plant or cash can be regarded as valuations. The earning power, or profitability, of the going concern is the means by which goodwill is evaluated, but it is not a reasonable description of what goodwill is. Spacek and many other writers, past and present, have fallen into this conceptual trap. The point was adequately made by Gynther when emphasising the fact that the *existence* of goodwill depends on certain factors which contribute to the overall profitability of the business.⁸ The *value* of goodwill depends on the level of this profitability.

Factors contributing to goodwill

Goodwill has normally been thought of as an intangible asset. For example, Sprouse and Moonitz described it as an intangible, as did the AICPA in its *Accounting Research and Terminology Bulletins*.⁹ Catlett and Olson similarly described the 'individual intangible factors contributing to goodwill'.¹⁰ However, in addition, several factors thought to be capable of contributing to the existence of goodwill have been occasionally put forward. Originally, the main factor was considered to be the business's customers and location. For example, a judge in 1810 (in *Crutwell v. Lye*) stipulated that

'The goodwill which has been the subject of sale, is nothing more than the probability that the old customer will resort to the old place.'

Subsequently, other factors have gradually been recognised as contributing to goodwill, and now the list is long; it includes development costs such as advertising; secret processes; franchises; licences; patents, trade marks and copyrights; good management; an efficient labour force; weaknesses in competitors; good industrial relations; a favourable credit rating with suppliers; sound training schemes; a high community standing; good relations with other com-

panies; and favourable government regulations. No doubt this list could be added to. The main points to evolve from it are as follows:

1. Goodwill, as such, does not exist. It is simply a word used to conveniently describe a number of business resources contributing to the overall profitability of the business.
2. Certain of these resources are within the direct control and administration of the business, others are not, being more directly attributable to customers, competitors, suppliers and government. It is conceded, however, that even these resources can be regarded as being under the 'control' of the business – that is, in the loosest sense of the term. For example, weaknesses in a competitor may exist because of corresponding strengths in the business; customers' favour has to be worked for and won; and a favourable credit rating requires a great deal of effort and control from the business and its management.
3. Contrary to the usual description of goodwill, certain of the factors contributing to its existence have a definite tangible quality – for example, management, secret processes, licences and training schemes. On the other hand, there are others which are definitely intangible by nature – for example, weaknesses in competitors and a high community standing.

Summarising, therefore, it appears logical to adopt the approach of Gynther and regard goodwill as an aggregate valuation of several business resources. This means that it should not be regarded as an intangible asset, for it is not an asset in its own right, nor are the resources it represents exclusively intangible. In any case certain of these resources benefit the business without being directly controlled by it.

Purchased and created goodwill

As previously mentioned, goodwill is acknowledged for accounting purposes only when it is purchased as part of a takeover or merger acquisition. The widespread adoption of this procedure appears illogical, for goodwill is recognisable at times other than when a business combination takes place. As pointed out in the previous section, goodwill has a value because of resources contributing to the overall profitability of the business. So long as these resources exist with a value to that business, goodwill must be recognisable. In addition, it should be accepted that its nature and valuation are bound to change whenever the contributing resources it represents change. A great deal of expenditure can be incurred by a business to maintain and augment its goodwill resources – for example, money and time spent on research, on advertising, on industrial relations, and on public relations. There-

⁷ Spacek, *op. cit.*

⁸ Reg. S. Gynther, 'Some "Conceptualising" on Goodwill', *The Accounting Review*, April 1969, pp. 247–255.

⁹ Robert T. Sprouse and Maurice Moonitz, 'A tentative set of broad accounting principles for business enterprises', *Accounting Research Study No. 3*, AICPA, 1962, p. 58; and *Accounting Research and Terminology Bulletins*, AICPA, revised edition, 1961, p. 37.

¹⁰ George R. Catlett and Norman O. Olson, 'Accounting for Goodwill', *Accounting Research Study No. 10*, AICPA, 1968, p. 20.

fore, why not account for non-purchased or created goodwill, in addition to accounting for that which is included in the purchase price for a takeover or merger? Not to account for created goodwill raises an additional question of whether or not the balance sheet gives a fair representation of the business resources which have contributed to the profits reported in the accompanying profit and loss account. To date in this country, no attempt has been made to account for anything other than purchased goodwill. The reasons are understandable, but sometimes difficult to justify. The following are a few such reasons:

1. The acquired conservatism of accountants, combined with a fear that created goodwill may well be a fictitious asset introduced to improve the financial position of the business described in its balance sheet.
2. Certain generally accepted concepts of accounting which are extremely difficult to apply in practice to goodwill – that is, historic cost, objectivity, and verifiability.
3. The difficulty of annually revaluing goodwill, such an exercise having to be based on several assumptions, including estimations of future profits and of what is a reasonable rate of return for the particular business.
4. The difficulty of capitalising the business costs which are contributing to the value of goodwill – for example, the cost of research or advertising expenditure. Which part of the total advertising expenditure of the business contributed to the sales which generated the profits related to goodwill? Such an allocation exercise would be, at best, artificial.

There is no major difference between purchased and created goodwill, except that the former is bought as part of a purchase consideration, whilst the latter is developed from within the business; however, being purchased in the sense that money and other resources are expended to create and maintain it. The main difference arises when the question of accounting for the two types is considered. Purchased goodwill, because it has a known money value established for it at one particular point in time, is by far the easier to account for. It should be noted, however, that once it is accounted for, and disclosed in the balance sheet, it merely represents the agreed valuation placed on certain resources, expected to contribute to future profits, at the *date of purchase*. It does not necessarily represent either the goodwill resources, or their reasonable valuation, at the *date of disclosure*. The nature of such resources can radically alter after the date of purchase, and their value is equally liable to fluctuations. It appears, therefore, to be wrong in principle to disclose the purchased goodwill figure as an asset, when it does not conclusively represent the

resources which contribute to its existence at the *date of disclosure*. Every other asset in the balance sheet, despite a probably conservative valuation, can be said at least to describe business resources which existed at the balance sheet date. This is not so with goodwill. There appear, however, to be two alternative solutions to this problem:

1. 'The amount assigned to purchased goodwill should be accounted for as a reduction of stockholders' equity.'¹¹ In other words, goodwill should be immediately written off, *in toto*, to reserves and surplus. This, of course, gets rid of the immediate problem, but tends to ignore the problems it creates in turn. For example, it ignores the fact that goodwill can represent a great many tangible and intangible business resources, each with a different value. Not to account for and disclose these resources in the balance sheet, under the heading of goodwill, could result in misleading financial accounts for either of the undernoted reasons:

(a) Not all resources contributing to the overall profitability of the business would be represented in the balance sheet; and

(b) there would be a consequent creation of secret reserves, universally condemned since the *Rex v. Kylsant* case in 1931.

2. Alternatively, despite the acknowledged difficulties, goodwill should be reviewed annually to reappraise its value, and thus, to ensure that the resources contributing to its valuation at the date of disclosure are realistically represented in the balance sheet.

These alternatives will be discussed further in other parts of this paper.

Goodwill as an asset

Goodwill is generally treated for accounting purposes as an asset, despite its composition of several resources contributing to business profits. The essential distinction which must be made in this respect is between the nature of goodwill, and the means by which it should be accounted for. The former factor logically precludes the description of goodwill as an asset in its own right, because there is in fact no such thing as goodwill, *per se*. On the other hand, the fact that goodwill is not an asset should not preclude an accounting for it as one. What have to be looked at are the resources represented by the term goodwill. If *they* can be regarded as business assets, then there appears to be no reason why they should not be treated as such for accounting purposes. Chambers, however, has

¹¹ A view expressed in *Accounting and Reporting Problems of the Accounting Profession*, Arthur Andersen & Co, 1969, p. 160, and supported in the conclusions of Catlett and Olson, *op. cit.*, p. 112.

taken an opposite viewpoint when declaring

'Goodwill is not an asset of a firm, being neither severable or measurable.'¹²

The characteristic of severability, advocated by him, requires that a would-be asset should be capable of being separated from the other assets of the business, thereby being capable of exchange or conversion. He regards goodwill as lacking this quality, despite being capable of evaluation but not of measurement in physical terms. It is true that many of the factors contributing to the existence of goodwill are neither severable nor measurable, but not to treat goodwill as a business asset for accounting purposes on these grounds appears to take too narrow a view of the nature of an asset. After all, many items of 'special purpose' plant could be defined as non-severable.

Hendriksen has laid down more reasonable conditions for resources qualifying as assets:

'There must exist some specific right to future benefits or service potentials.'

'The rights must accrue to a specific individual or firm.'

'There must be a legally enforceable claim to the rights or services.'¹³

So far as the contributing goodwill resources are under the direct control of the business and its management, these conditions appear to support the treatment of at least the 'controllable' elements of goodwill as assets for accounting purposes – that is, those representing such factors as secret processes, franchises, advertising campaigns, etc. However, there are other contributing resources which fail to satisfy the second and third conditions of Hendriksen, either because an individual business cannot have an exclusive right to benefits from them (for example, a favourable trading location or government regulations), or because it has no legal claim to them (for example, its labour force or its management, after allowing for any contractual commitments).

The treatment of goodwill as an asset, if the above conditions are taken as reasonable criteria, therefore appears to be only partially justifiable because of the nature of many of its contributing resources. Nevertheless, it appears unfair to ignore goodwill as an accountable asset, merely on the grounds that other businesses can benefit from the contributing factors, or that the business has no legally enforceable claim to the latter. Hendriksen's conditions are reasonable when taken in the context of resources which can be separately identified, valued, and exchanged or converted – for example, those such as plant, inventory, debtors or cash. But they do not apply to many of the resources

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represented by goodwill which lack the general quality of separability for identification or valuation or exchange purposes. This conceptual difficulty has precipitated what appears to be the rather illogical approach advocated by Arthur Andersen and Co and its partners (including Spacek, Catlett and Olson), of removing the goodwill problem by eliminating it from the financial accounts whenever it arises in a purchase consideration. They argue that goodwill is not an asset of the business, rather that it is an evaluation of the business's future by the investor, and as such should not appear in the financial accounts of the business. Spacek has summarised this viewpoint in the following manner:

'Goodwill value reflects a state of mind of the investor based on his expectations or anticipations.'¹⁴ He and his partners believe that it is the investor who determines the value of goodwill, this being based on what he expects will be the future profitability of the business. Goodwill, therefore, is put forward as nothing more than a statement of value describing what the business's owners expect to be its future profits. This original, if somewhat startling conclusion is, however, at variance with the accounting concept of goodwill as an asset, for the following reasons:

1. It ignores the various resources contributing to the existence of goodwill, and thus, to the overall profitability of the business.
2. It confuses the nature of goodwill with the means of valuing it.

It therefore fails on the grounds of logic, for if such an approach was adopted with all the resources of the business, the entity would, by definition, have no assets to account for.

The valuation of goodwill¹⁵

The valuation of business assets should subsist in the expectation of benefits which can be derived from their use or existence within the business, measured in terms of expected profitability. This view of asset valuation, supportable for no other reason than common-sense, is at variance with certain of the concepts of traditional historic cost accounting, mainly because of its weakness in terms of objectivity and verifiability. Initially, purchased goodwill is valued according to future expectations – that is, those which exist at the time of its acquisition. Forming part of a business combination, its value is determined by reference to the anticipated future profitability of the business – capitalisation or discounting methods being used for this purpose. However, having been pur-

¹⁴ Spacek, *op. cit.*, p. 362.

¹² Raymond J. Chambers, *Accounting, Evaluation and Economic Behaviour*, Prentice-Hall, 1966, p. 218.

¹³ Hendriksen, *op. cit.*, p. 253.

¹⁵ This paper is essentially devoted to the accounting treatment of goodwill, and for this reason, a detailed exposition of how goodwill is evaluated is not given.

chased, the agreed valuation for goodwill is accounted for in the traditional manner. It becomes merely another past capital cost, possibly to be allocated in some arbitrary manner against future sales revenue. It no longer remains a figure representative of *current* expectations of the future. Instead it is representative only of past expectations of the future. It would therefore appear to be not only unrepresentative of the resources contributing to the profits which give grounds for its existence (as previously pointed out, it is only purchased goodwill which is recognised for accounting purposes), but also, unrepresentative of the value of the future benefits to be derived from these resources. To be fair, however, the latter point is also true of the traditional accounting for many of the other resources portrayed in the business balance sheet, which are valued on the basis of their original cost. The problem of accounting for the value of goodwill reflects, therefore, a much greater valuation problem, involving all the resources contributing to business profits.

The disposition of goodwill

Probably the most discussed goodwill topic of all has been the problem of its treatment in the financial accounts, once it has been recorded as a purchase cost. The solutions advocated have been various, yet no generally acceptable treatment has emerged. The reason for this lack of agreement appears to be the lack of a corresponding agreement on the nature of goodwill itself.

The earliest writers on goodwill (for example, Dicksee) thought that it should be excluded from financial accounts, mainly because of the fear that existed at the time that the introduction of goodwill into the balance sheet could produce misleading information. The intangible quality of goodwill was regarded at the time with a great deal of suspicion, a figure often being introduced to the accounts in order to create reserves which could be used to pay dividends to shareholders. Because of this abuse, goodwill, when it was purchased, was written off immediately to capital reserves (including any share premium account). Gradually, however, with the recognition of goodwill's relationship to the overall profitability of the business, the idea evolved that the purchased cost could be amortised over an estimated life, and effectively charged against profits. Indeed, the AICPA advocated this procedure in 1944 in *Accounting Research Bulletin No. 24*, and has continued to do so since in its subsequent publications.¹⁸ However, despite this official guidance, a controversy has arisen over the accounting disposal of goodwill, involving

three different viewpoints – (a) goodwill should be written off completely as soon as it is purchased,¹⁷ (b) it should be amortised systematically over a reasonable period of time,¹⁸ or (c) it should not be written off at all, unless there is strong evidence to support this procedure.¹⁹

Some of the arguments for writing off the purchased cost have been as follows:

1. Goodwill is constantly changing, in nature and value, because of, corresponding changes in the underlying contributing resources. The goodwill that exists at one particular point in time is not necessarily the same goodwill that was originally purchased. Therefore, the latter figure should be eliminated from the accounts in order to avoid misrepresenting the contributing resources at the date of disclosure.
2. Purchased goodwill is a 'momentum' – that is, a promotional push which the buyer is willing to pay for rather than build up himself. It gives him the platform upon which he can maintain and increase the existing profitability of the business.

'The Momentum Theory is the hypothesis that a businessman purchases a promotional push instead of an annuity and that "push" dissipates like momentum.'²⁰

Writing off goodwill therefore represents the dissipation of this momentum.

3. Goodwill is a depreciable asset, and therefore, its cost should be written off as a depreciation charge to profit.
4. The resources contributing to goodwill also contribute to the profits which are the basis of its valuation. The cost of these resources is part of the total cost of earning such profits, and consequently, should be treated as such.
5. The so-called 'superior earnings' or 'excess profits' which evidence the value of goodwill cannot last forever. Therefore, goodwill cannot 'exist' forever.

The main arguments against writing off goodwill include:

1. The danger of unnecessarily creating a secret reserve in the financial accounts when the value of goodwill is not falling.
2. The difficulty of determining any change in the value of goodwill.
3. When profits of the business are rising, over and above any general expansion in the business, the

¹⁷ See Spacek, *op. cit.*, and Catlett and Olson, *op. cit.*

¹⁸ George T. Walker, 'Why Purchased Goodwill Should be Amortised on a Systematic Basis', *The Journal of Accountancy*, February 1953, pp. 210-16.

¹⁹ See Gynther, *op. cit.*

²⁰ Robert H. Nelson, 'The Momentum Theory of Goodwill', *The Accounting Review*, October 1953, p. 492.

¹⁸ See 'APB Opinion No. 17: Intangible Assets', *The Journal of Accountancy*, October 1970, pp. 85-89.

indications are that the value of goodwill is also rising. It would therefore appear illogical to write off goodwill in these circumstances.

4. In a successful business goodwill should be being maintained and increased in value.

If any consensus has been achieved, at least amongst writers on goodwill, it is that its purchased cost should be amortised over an estimated life, and charged against current profits. Such an approach recognises the gradual diminution in the value of the contributing goodwill resources which existed at the original date of purchase, but it completely ignores the replacement value of such factors, which have been created since that point in time. The accounting disposition of goodwill, as with any other aspect of the topic, should be viewed in terms of the existence and profit contribution of the contributing resources. All too often, goodwill is regarded as a complete asset in its own right, with a consumable cost to be matched against sales revenues. It is therefore advocated that the purchased cost of goodwill should not be written off unless there is firm evidence of a diminution in the profit contribution of the supporting goodwill resources.²¹ How such an approach can be practised will be looked at in the following sections.

Summary and conclusions

The following summary and conclusions are offered for comment and discussion:

1. Accounting for goodwill normally arises when there is a payment for such an item as part of a business combination. It is usually treated, for accounting purposes, as an intangible asset, and disclosed as a separate asset in business balance sheets. Its eventual accounting disposition varies from one business to another, some amortising it, some writing it off immediately, and others not writing it off at all.

2. The problem of goodwill, and especially its disposition for accounting purposes, can be avoided, by the technique of pooling accounting, if certain conditions are satisfied.

3. There is general acceptance of the direct relationship between goodwill and profits, and this has given rise to a basic misunderstanding – that is, the nature of goodwill, as described in the profit-contributing resources it represents, being consistently confused with the means of valuing it on the basis of anticipated profits.

4. Goodwill represents several tangible and intangible resources which contribute to its overall profitability, but which cannot be separately valued.

5. Goodwill 'exists' in a business at any time so long as the resources it represents exist. The busi-

ness continually incurs expenditure to maintain, replace and augment existing goodwill. Basically, therefore, there is little to distinguish purchased and created goodwill. But, because traditional accounting does not recognise the latter aspect of goodwill, there is a danger of disclosing a figure in the balance sheet which is not representative of the nature or the valuation of the resources it is intended to describe.

6. Goodwill has been generally regarded in the past as an intangible asset. In fact, no such asset exists, goodwill representing several resources contributing to overall profitability. Many of these resources would be hard to classify as business assets in the conventional sense, but this should not prevent their accounting treatment as such, for all are potentially profit earning.

7. Goodwill is part of the business, and should not be attributed to investors in terms of their expectations.

8. Purchased goodwill is valued on the basis of future expectations of profit, but once accounted for as purchased, it becomes merely a record of *past* expectations of the *future*.

9. There is no generally accepted method for the accounting disposition of goodwill. The most reasonable approach appears to be to write it off only when there is evidence of a decline in its value.

10. The easiest way of dealing with the goodwill problem appears to be to adopt the 'Arthur Andersen and Co.' approach of recording goodwill only when it is purchased, and then, writing it off totally to reserves and surplus. This ignores the very nature of goodwill, and is liable to produce misleading financial accounts.

11. A totally different approach to accounting for goodwill appears to be necessary, in which the nature and existence of the underlying resources which goodwill represents are adequately recognised. To recognise and account only for purchased goodwill ignores the continuing presence of these resources in a business. To amortise goodwill on an arbitrary, albeit systematic, basis equally ignores the changing nature and valuation of the resources. To immediately write off goodwill as soon as it is purchased is to provide misleading information.

What the previous discussion has attempted to highlight are the gross inadequacies in the present accounting treatment of the business resources represented by the term goodwill. These resources are recognised only when there is a commercial exchange between parties, with an agreed purchase price. Their continuing existence is not recognised, and this means that possibly the most valuable resources of the business (value being measured in terms of profit potential)

²¹ This is similar to the conclusion of Gynther, *op. cit.*

are being ignored for accounting purposes. There appear to be three alternative approaches to this problem: Either

1. a 'head in the sand' approach is adopted, in which the problem of the accounting creation of continuing goodwill is ignored, as at present. This would leave the separate problem of accounting for any purchased goodwill along the alternative lines previously discussed. The lack of logic in this approach has already been stated; or
2. the existence of continuing goodwill is acknowledged without formally accounting for it. This could be done in the manner suggested by Gynther of not writing off goodwill so long as there are reasonable grounds for not doing so. However, it appears to be a rather casual way of accounting for business resources; or
3. some formal attempt is made to acknowledge the continuing existence of the underlying resources contributing to goodwill. As most of these resources have not formed part of a historical cost exchange transaction, the most important accounting criterion appears to be their 'service potential' or future profitability. But in order to separately value continuing goodwill for accounting purposes, the future profits to be anticipated from the underlying resources would require to be estimated for capitalisation or discounting purposes. As it is somewhat unrealistic to divide total anticipated business profits between individual resources (to do so would be a necessarily artificial and subjective exercise), the logical conclusion is that it would be an equally artificial exercise to attempt to value continuing goodwill in a situation where there is no willing buyer or seller to place an exchange value on it.

The above remarks, together with earlier ones in this paper, reflect one of the main drawbacks of traditional historical cost accrual accounting, which relies so heavily on the firm foundation of past business transactions – resources only being accounted for if they are part of a transaction of some sort or another. The result is that not all the business resources contributing to overall profitability are accounted for and reported in the periodic financial statements. In addition, if there was to be a departure from traditional accounting methods in order to account for these hitherto undisclosed resources, the valuation process could very well prove to be an extremely unreliable one. The inevitable conclusion is that to account and report on business resources, as part of a stewardship function, tends to give unreliable information, whether continuing goodwill is acknowledged or not. The answer may very well be to place less emphasis on the provision of 'stewardship' information, and

instead, to produce information of greater use and relevance to the investor in his decision-making function. This, as the next section attempts to show, could result in business resources not being accounted for at all, the emphasis switching to the contribution of these resources to the *future* success and continuance of the business as a whole. In this way, it is hoped, goodwill resources could be acknowledged without having to be formally accounted for.

Postscript—a possible solution

The most pressing requirement for formal financial information describing business activity comes from investors making continual assessments of the desirability of investing in individual entities. The requirement is for information of use and relevance in such an exercise – that is, information which helps the investor to decide which of the following alternative actions is likely to be the most beneficial:

1. Whether to maintain an existing investment in a business; or
2. to increase such an existing investment; or
3. to dispose of it, either partially or totally; or possibly,
4. to acquire, for the first time, an investment in the business.

With each of these alternatives, the investor is comparing the desirability of investing in the business with the desirability of investing in others.

It is therefore suggested that the most valuable information for this type of investment appraisal is that which describes future business activity, including information regarding the financial rewards to be anticipated from it. It is submitted that it is *future* business performance which is most relevant and useful in this respect, and not past activity. The present form of stewardship financial statements merely tend to support or contradict the *past* desirability of investing in a business.

If it is accepted that anticipated business activity is both relevant and useful to the investor, then it is a logical extension of the argument to suggest that profit forecasts might be the basic type of information required. However, profit forecasts tend to be accrued historic cost measurements of projected activity, subject to all the problems of traditional accounting and superimposed upon the subjectiveness and uncertainty inherent in any forecast about a business's future. The only type of financial information which effectively minimises the effects of present-day accounting practices is that relating to cash flow projections. It is therefore suggested that, in the first instance, quoted companies should publish cash transaction forecasts (incorporating both revenue and capital items) for, say, the next three to five years, depending on the

nature of the business, and the degree of uncertainty about its future, together with (a) a statement detailing the various commercial, economic and political assumptions on which the forecasts have been based, and (b) a statement describing the effect on these forecasts due to possible variations in the assumptions.²² The disclosed forecasts should be supported by statements of past cash flows achieved by the company, and should be subject to annual re-assessment for disclosure purposes. They would *not* be supplemental to the existing profit and loss accounts and balance sheets, although the latter statements could still be published for stewardship purposes. In addition to publishing past and future cash flows, management should also be required to disclose its explanations of any material differences between forecast and actual figures, as well as of differences due to revisions to original forecasts. The advantages of this type of financial information are as follows:

1. Management's view of the future of its business is projected for the benefit of investors who are basically concerned with evaluating the desirability of being part of that future.
2. An estimation of the present value of the disclosed cash flows can be made, *by investors*, and used as a basis to their decisions concerning alternative investments. By discounting back the projected cash flows to present values at a rate of interest regarded by him as reasonable for that type of company, business or industry, the investor can calculate the discounted cash flow per share for the company, apply it to the current market value of the shares, and calculate a 'price/discounted flow' ratio for comparison with similarly calculated ratios for other companies. Ideally, the projected cash flows should be split into monthly or three monthly streams for discounting purposes, rather than assume the entire flow is achieved on the last day of each annual period. This analysis could certainly be done for the first one or two years of the disclosed forecasts. With the less sophisticated investor, the 'price/flow' ratio could be calculated without the discounting procedures.

The 'price/flow' ratio appears to be a somewhat more reliable investment indicator than the present

'price/anticipated earnings' ratio, which is subject to the problems of present accrual accounting practice. However, like all financial or accounting indicators, it is only reliable so long as it is computed on a comparable basis.

3. Future business activity would be quantified on a cash basis, thereby avoiding the allocation problems met with in traditional accounting, including the depreciation of fixed assets, valuing inventory, writing off research and development costs, and so on.

4. The effects of any changes in the purchasing power of money due to inflation or deflation, for so long a recurrent problem in historical cost accounting (with its assumption of a stable monetary unit), are avoided. Price-level adjustments, which are no more than amendments to historical costs, would no longer be necessary.

5. The somewhat artificial distinction between capital and revenue transactions, and the development of criteria to classify business assets, would be equally unnecessary.

6. A present value of anticipated cash flows can be calculated, thereby acknowledging the existence of *all* the resources of the company contributing to its overall financial success or failure, including those resources represented by the term goodwill. In this way, there would be no need to separately account for goodwill, or indeed any of the other so-called business assets. They would be recognised and accounted for in a manner which accepts the fundamental interrelationship of all business resources in a going concern – their contribution to the total business cash flow. There would therefore be no artificial distinction between purchased and created goodwill.

7. Should business profitability be regarded as relevant financial information for investors, then periodic profits could be computed by comparing the present values of anticipated cash flows at the beginning and end of each accounting period, along the lines suggested by Hicks in his concept of 'well-offness'.²³

8. Most important, investors could see from the projected cash flows the anticipated ability of the company to pay its way in the future in terms of cash, and in particular, its planned financial policy. The importance of generating sufficient cash resources, and of cash forecasting, should be more than obvious at a time which has witnessed the crash of Rolls-Royce Ltd.

The disadvantages of this solution must also be stated:

²² Such a suggestion goes further than the recent views of Gerald Lawson on cash flow accounting (See *Accountancy Age*, 6/11/70, pp. 10-11). He advocated disclosure of past cash flows, but so far as disclosing anticipated flows, he had this to say:

'From a managerial standpoint the budgetary requirement is eminently desirable but as regards the implications for disclosure in published accounts, it is at present perhaps too *avant garde*. In the longer run though, I would have thought it desirable that companies should be required to disclose more details of corporate plans in numerical terms'.

²³ J. R. Hicks, *Value and Capital*, Clarendon Press, 1946, pp. 171-81.

1. It is extremely difficult to project business cash flows, particularly in times of inevitable change, both economically and technologically. However, management should be making these projections as part of its procedures for planning, decision making and control. Internal information would therefore be made available to external sources.

2. There are also difficulties to be faced when assuming a reasonable rate of interest for discounting purposes. It is suggested that in order to retain objectivity in this matter, management should be required to disclose a rate of interest necessary to at least maintain its anticipated financial position. For this reason, the rate used would approximate with the anticipated deterioration in the general purchasing power of money. The known current deterioration rate would be used as a basis to this exercise. This evaluation could then be used by investors in a separate evaluation of *their* expectations of the business's potential, over and above the minimum necessary to maintain its anticipated activity (see also 4(b) below).

3. There is a danger of giving competitors information concerning the future plans of the company. However, if such information was generally disclosed by quoted companies, then all would to some extent be aware of each other's plans. This could have the added advantage of improving the forward-thinking of management as a whole, to the benefit of the community at large.

4. There is a danger that management could take advantage of the inevitably hypothetical nature of the exercise, to over or underestimate the cash flow of the business in order to alter its market rating. However, two means of controlling this situation exist:

(a) those companies disclosing anticipated cash transactions would also be required to disclose the actual transactions which took place, giving investors the opportunity to examine for any material differences;

(b) any existing or would-be investor, would have to use his own rate of interest in the present value calculation, which may or may not agree with the 'minimum' one supplied by management. The investor rate would depend on an evaluation of several factors, including the degree of risk and uncertainty in the type of business activity undertaken; and in general, economic and political conditions and regulations. For purposes of making personal evaluations of present values, investors could be supplied with appropriate annuity tables in the financial statements. This would help to counter a major criticism made by Hendriksen of these exercises:

'Expectations regarding future cash flows cannot be converted into single values or certainty equivalents without knowing the risk preferences of the users of the information.'²⁴; and (c) both the anticipated cash flows, and the reasonable discounting rate, should be subject to audit, the result of which would be an opinion on their reasonableness. The purpose of this audit would be to lend *credibility* to the forecasts. Who would conduct this function must be determined by the subject-matter being verified. Accountants are experts at verifying accounting matters, but cash forecasting involves assumptions and calculations which are mainly non-accounting in nature. It is therefore suggested that the audit be divided into two distinct parts:

(i) the non-accounting part, involving verification work which can only be conducted by management experts, such as those presently employed by consultancy firms and merchant banks. Their report would contain an opinion on the reasonableness of the main economic, political and commercial assumptions underlying the cash forecasts, the minimum rate of interest for discounting purposes, the probabilities linked with any disclosed forecast variations, and the consequences of forecasting errors; and

(ii) the accounting part, conducted by professional accountants, who would comment on any accounting methods and calculations used by the business when computing the forecasts, as well as reporting on their verification of the disclosed cash flows actually achieved. This would introduce a greater degree of objectivity and verifiability to auditing than is at present being experienced in accrual accounting audits. However, the latter audits would presumably continue as at present.

The above division of auditing duties is similar to that required with current profit forecasting for take-over and merger purposes.

5. There are problems in using this type of financial information to assess managerial efficiency – that is, when determining whether the cash flows are due to managerial action or fortuitous circumstances.²⁵ This point is conceded with the reservation that

²⁴ Hendriksen, *op. cit.*, p. 137. Readers are recommended to read his conceptual objections, most of which are answerable by the suggestions in this paper.

²⁵ Indeed, one recent writer, Harold Edey, in 'The Nature of Profit', *Accounting and Business Research*, Winter 1970, pp. 50–55, although apparently supporting the theoretical justification of present value calculations of this type, concluded that they 'probably cannot be more than rough and generally speaking unreliable gauges of management efficiency'.

good management should be taking full advantage of fortuitous circumstances; and in any case, it is extremely difficult to produce *any* quantified information which is likely to completely satisfy such an assessment.

The above solution goes far beyond the problem of accounting for goodwill. It is radical and of necessity, tentative; yet it appears to provide financial information which satisfies the criteria of relevance and utility to the investor. The problem of goodwill highlights the fact that traditional historical cost accrual account-

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ing does not provide information with the necessary degree of these qualities. It is therefore hoped that this possible solution may at least open a discussion and debate on the inadequacies of both goodwill accounting and financial reporting, which is long overdue.

Note: I would like to record my appreciation of the efforts of two of my colleagues, Peter Forbes and Tom Robertson, who over a relatively long period of time have helped me over many of the conceptual and practical hurdles in this paper.

What can we learn from published accounts in the USA?

P. R. A. Kirkman

Detailed comparative information regarding the contents and presentation of published accounts in the UK has in the past been extremely difficult to obtain. Certain information must be disclosed in the annual report and accounts under current company legislation, but many matters are left to the discretion of company directors, and as a result one finds considerable variations in content and presentation. In the past most comments have been based on small random samples of published accounts, but in 1970 the position was considerably improved by the publication of the first Survey of Published Accounts, and the arrival of the second survey early in 1971,¹ based on the methods of financial reporting used in 1969/70 by 300 major UK companies, now provides the opportunity to make a more detailed comparison of the published accounting information provided by leading UK and USA public companies. In the USA a similar annual survey has been carried out for many years in the publication *Accounting Trends and Techniques*, the latest edition of which² examines the reports of 600 major companies for 1969/70. The information provided in this article is also based on the examination of many sets of published accounts, but statistics and information provided in the surveys have proved invaluable. Unfortunately a detailed examination of all relevant points is not possible in an article of this length, but an attempt has been made to pick out those matters that are currently of most interest and controversy. It is hoped that the results will be of particular interest to company directors and accountants, and financial analysts.

The legal background

The minimum contents of published accounts in the UK are dictated by the Companies Acts of 1948 and 1967. Very few companies provide important informa-

tion that is not required by law, e.g. virtually no information is provided by UK companies relating to the cost of goods sold. The London Stock Exchange also requires the disclosure of certain financial information, additional to that required by company legislation, and these regulations must be adhered to if companies desire a stock exchange quotation. Recommendations are also made by the professional accountancy bodies – usually the appropriate Institute of Chartered Accountants – but these generally have no binding force, and in the past some companies have ignored them completely. The three Chartered Institutes, through the Accounting Standards Steering Committee (ASSC), are now intending to provide occasional statements of standard accounting practice. The first of these statements, dealing with the treatment of associated companies, will apply to financial years commencing after 1 January, 1971. The Institutes intend to take a much tougher line to ensure that there is adherence to these statements, but they have already found objections coming from as powerful a source as Imperial Chemical Industries Limited. It will be interesting to see what action is eventually taken against the nonconformists, especially if they are large companies. A qualification in the auditor's report, if pressure can be exerted on the auditor by the Institute, would not necessarily be of any great effect in such a case.

In the USA there is no similar nationwide legislation, but the Securities and Exchange Commission (SEC), a body created by federal legislation in 1934, requires companies to file certain financial information if they wish trading to take place in their securities. The SEC has the right to lay down which accounting principles should be adopted, and in this connection it works very closely with the Accounting Principles Board (APB), which was set up, largely at the initiative of the AICPA, some 12 years ago. The APB, which relies mainly on voluntary assistance from AICPA members, issues from time to time official opinions. Companies do not have to comply with these opinions, but the

¹ Published by the General Educational Trust of the Institute of Chartered Accountants in England and Wales.

² Published by the American Institute of Certified Public Accountants (AICPA).

normal SEC approval of these opinions means that non-compliance could lead to the suspension of trading in that company's securities. Auditors are also expected to ensure that any departure from issued opinions is pointed out to shareholders. Quoted companies must also comply with the regulations of the appropriate stock exchange, and the New York Stock Exchange in particular has had a very strong influence on the contents of accounting statements. In most cases, however, the information required by the SEC and the stock exchanges is very similar. The vast majority of quoted companies therefore comply with the APB opinions, but the same pressure cannot be brought to bear on the non-quoted company.

The profit and loss account

General presentation

Those people who are familiar with published profit statements in the UK will find little difficulty in understanding comparable statements in the USA, which will usually appear under the heading of income (or sometimes earnings) statement. Probably the major difference is that the majority of USA companies (approximately two-thirds)³ use a single-step system of presentation, under which there is an income grouping with a single total, followed by an expense grouping with another total. There is a definite division of opinion, however, as to whether taxation should be included with expenses or shown separately. The remainder of USA companies use a system of presentation similar to that used by nearly all UK companies, with a number of intermediate balances or profit figures being provided before the final profit figure is shown.

Most UK companies deal with the distribution of profits within the profit and loss account. In the USA however, there is a conflict of opinion on this matter, and there is an almost equal division between those companies that present separate statements of income and retained earnings, and those that combine all the information into one statement. USA companies also normally provide earnings per share information within the income statement, in accordance with an opinion issued in 1969.⁴ Such information is still comparatively rare in UK published accounts, although an official ASSC statement is expected on this subject, following the circulation of a recent exposure draft.

The vast majority of companies in both countries now present this account in vertical statement form, with additional information being provided in ac-

companying schedules. Recent UK company legislation probably means that the average UK company now provides more supplementary profit information than its counterpart in the USA. Both in the UK and the USA certain expense information is provided in other parts of the annual report and accounts, e.g. over 30 per cent of USA companies provide details of employee costs, but this is usually disclosed outside the income statement. Information on total company wages and salaries has to be disclosed in the directors' report in the UK if there is a weekly average of 100 employees or more.

Content

The major difference in profit statement content probably relates to the provision of information on the cost of goods sold. Sales figures are nearly always provided in both countries, although this is a comparatively recent development in the UK, brought about by the Companies Act, 1957. There is, however, no compulsion in the UK to provide information on the actual costs of goods that have been sold, and as a result nearly all companies refuse to disclose the relevant figures. Shareholders and analysts can compare the sales and net profit figures, but the resulting amount is a mixture of the cost of goods sold and various expenses, and is not very satisfactory. In the USA the position is very different, and over 77 per cent of companies disclose the cost of goods sold. The majority of these companies do not actually calculate the gross profit amount, but provide totals for such headings as cost of goods sold, general expenses (most frequently described as selling, general and administrative expenses), depreciation and interest, which eventually lead to the provision of amounts for total costs and expenses, and net income.

Depreciation

The information that should be disclosed regarding depreciation policy is controversial in both countries. Less than 10 per cent of UK companies provide information on the rates of depreciation that are being used, and very little useful data is provided on anticipated asset lives. Under one-third of companies state the method of depreciation that is being used. Where this information is provided the straight line basis is easily the most popular. In the USA the position seems slightly better, largely due to an official opinion issued in 1967.⁵ About 90 per cent of companies disclose the method of depreciation being used, and once again the straight line method is easily the most popular, being used by over 90 per cent of the companies that disclose their depreciation policy. Comments regarding

³ All statistics provided relate to the two surveys already mentioned. It is accepted that in a larger survey covering smaller companies the results might be very different.

⁴ APB Opinion No. 15.

⁵ APB Opinion No. 12.

actual rates adopted are very scarce, but nearly all companies disclose information regarding the comparability of their tax and book figures, largely because of a taxation opinion issued in 1967.⁶ It is interesting to note that in nearly three-quarters of cases there is a difference. This latter information is almost non-existent in the UK, although one suspects that there would be differences in the vast majority of cases.

Other profit and loss items

In both countries there has been a considerable amount of controversy relating to extraordinary and prior-period items. Confusion has arisen mainly because some companies deal with such items in the current accounts, sometimes before and sometimes after taxation, whilst others adjust reserve figures in the balance sheet. In the UK an exposure draft has recently been issued which should eventually lead to an official statement, whilst in the USA an official opinion⁷ was issued in 1966 which required that all extraordinary items should be shown in the income statement. This has certainly improved the situation, although there are still certain differences of interpretation.

Another subject of very great current importance is that of price-level accounting. In the USA an official statement⁸ was issued in 1969 which stressed that price-level information was not required for a fair presentation of the financial position, although it was accepted that such information would be useful. The response of virtually every company in the USA has been to ignore price-level adjustments in the official accounts, although over one-quarter of companies mention inflation in their annual reports. The position is very similar in the UK, although a few companies deliberately reduce profit for inflation purposes by creating additional reserves or by basing depreciation on replacement costs. A discussion paper on this subject *Inflation and Accounts*, was issued by the ASSC in September 1971.

Many items show very similar developments. In both countries there is a gradual movement towards turnover and profit splits where there are substantially different classes of business.⁹ The position regarding research and development expenditure does, however, seem equally unsatisfactory with very conflicting opinions regarding the capitalisation of such expenditure. Statements seem called for in both countries for more precise information on the method of

allocation. The treatment of taxation presents complications in both countries, and it could perhaps be claimed that we have achieved slightly more consistency on this matter than in the USA, although the position in that country has been improved by an official taxation opinion. Presentation does, however, appear to be definitely superior in the UK with virtually every company providing details of profit figures before and after taxation.

The balance sheet

General presentation

The term balance sheet is usually adopted in both countries, although a small minority of USA companies (under 15 per cent) use the description 'statement of financial position (or condition)'. In recent years in the UK there has been a strong movement away from the traditional two-sided form of balance sheet, and 84 per cent of companies deduct current liabilities from current or total assets, in most cases as part of a vertical method of presentation. Many accountants believe that the UK is following trends in the USA in this respect, but this is surprisingly not the case. Over 94 per cent of USA companies adopt the formula that assets equal liabilities plus shareholders interests, with assets usually shown in order of liquidity on the left hand side of a two-sided statement. This compares with a figure of 86 per cent 14 years ago, and it would appear, therefore, that there is a definite movement away from the present majority viewpoint in the UK, i.e. fixed assets plus working capital equal shareholders interests plus long-term loans.

It is interesting to speculate on the reasons for this rather different emphasis in presentation which has developed over the last few years. The answer may lie in different attitudes towards the definition of capital employed. In the UK the vast majority of accountants and analysts regard capital employed as the equivalent of net assets, whilst in the USA more attention is generally given to the total assets figure. Most accountants in the USA would argue that a proper return must be made on all assets, regardless of the credit situation, and it does seem that a small number of UK organisations are now accepting this approach to the definition of capital employed, e.g. the Centre for Inter-firm Comparison now compares profit to total assets in most of its profit comparison exercises. Probably the strongest point in favour of the present UK majority viewpoint on balance sheet presentation is that working capital is clearly indicated to shareholders and analysts. Admittedly the calculation of this figure from traditional type balance sheets is not difficult, but with an increasing number of companies facing liquidity problems, the emphasis on the working capital situation

⁶ APB Opinion No. 11.

⁷ APB Opinion No. 9.

⁸ APB Statement No. 3. Statements are primarily informative documents, as opposed to the official pronouncements expressed in opinions.

⁹ See Companies Act, 1967, Section 17, and APB Statement No. 2, 1967.

does seem to be a very important and worthwhile change in financial statement presentation.

Shareholders funds

Companies in both countries usually provide a balance sheet sub-total indicating shareholders funds (stockholders or shareholders equity in USA). This is usually the result of an addition involving issued share capital and reserves, although some companies, where preference shares exist, provide sub-totals for equity shareholders funds and total shareholders funds. The heading reserve is not widely used in the USA¹⁰ in the same sense as it is in the UK, and one usually finds the heading retained earnings used as the final item in the composition of shareholders funds. Several terms are used to describe the equivalent of the UK share premium, the most popular ones being capital surplus, capital paid in excess of par value, and additional paid-in capital. In most cases USA companies have avoided the multiplicity of reserves that are maintained in the UK, e.g. there were over twenty types of reserves maintained by the 300 companies involved in the survey, and this does seem an appropriate time to ask if such a large number of reserves is really justified. It is interesting to note that although shares of no par value are fully accepted in the USA (unlike the UK), well over 80 per cent of USA companies do use par values. It will be interesting to see what happens in the UK if shares of no par value are approved in the next Companies Act.

Fixed assets

The vast majority of companies in both countries show property, plant, equipment, and other similar assets at historical cost, less depreciation if appropriate. In the UK, however, an increasing number of companies arrange periodic revaluations of their property, but this practice is frowned upon in the USA under an opinion published in 1965¹¹ which stated that such assets should not be written up to reflect current values which are above cost. As a result virtually all property is shown at cost. At first glance the position may appear better in the UK with nearly two-thirds of companies arranging some degree of property revaluation, but many of these valuations took place several years ago, and only 12 per cent of companies arranged property revaluations in 1969/70. This latter figure may be misleading, however, as it does not necessarily mean that all company property has been revalued. Recent company legislation in the UK probably means that companies now provide considerably more information on their fixed assets than their USA counter-

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parts e.g. full details of yearly additions and disposals are now compulsory, and a division is required between freehold and long and short-term leasehold properties.¹² There is also a rather vague clause¹³ concerning the market value of land, which has not so far produced many professional valuations (only eight out of 300 companies). This type of information is generally disclosed in attached notes, or in the directors report, rather than on the face of the balance sheet.

Goodwill

The treatment of goodwill appears to be very similar with about half of the companies in both countries not showing goodwill in the balance sheet. In most cases goodwill, where it is shown, arises from the excess of cost over book value of acquisitions. In both countries there is no really consistent policy on the writing down of goodwill. In the USA, there appears to be an almost equal split between those companies that retain goodwill at cost and those that write down the original value, but similar information is not available in the UK. Professional recommendations may make substantial differences in this area in the future. In the USA an opinion was issued in 1970,¹⁴ and included the requirement that the cost of all intangible assets acquired after 31 October, 1970, should be written off over a period not exceeding forty years. An exposure draft on this subject is expected in the UK in the near future. In both countries today goodwill and other intangible assets are usually shown under a separate heading, and are not generally included with other fixed assets.

Stock and work in progress

Information regarding the composition of stock (or inventory as it is described in the USA) is not as common as one would hope in either the UK or the USA. Nearly 40 per cent of the companies in both countries use a general heading without any sub-divisions. Other companies do provide information regarding raw materials, finished goods, work in progress, consumable stores, etc. which is naturally very useful to the external analyst. In the UK details usually have to be published¹⁵ regarding the method of stock computation, but this generally produces the simple but not very helpful information that stock is valued 'at the lower of cost and net realisable value'. In the USA, over 85 per cent of companies state the basis of all or some valuations as 'the lower of cost or market value', the latter being generally understood to mean replacement

¹⁰ See AICPA Accounting Terminology Bulletin No. 1, 1953.

¹¹ APB Opinion No. 6.

¹² Companies Act 1967, Schedule 2, 11.

¹³ See Companies Act, 1967, Section 16.

¹⁴ APB Opinion No. 17.

¹⁵ Companies Act 1967, Schedule 2, 11.

cost. Information relating to the determination of cost is not compulsory in the UK and only 41 per cent of companies provide relevant information, which in most cases is concerned with the amount of overheads included in cost. USA companies generally provide more information in this respect, and it is interesting to note that the last-in first-out (LIFO) method of stock valuation (not accepted in the UK for tax purposes), which was the most popular method of valuation in 1955, largely because of taxation considerations, is now third in the list behind the first-in first-out (FIFO) and average cost methods.

Investments

One of the balance sheet headings that presents most difficulties is undoubtedly that of investments, and there are many similar problems in both countries. With investments other than subsidiaries there is the problem of whether such items should be shown under current or fixed assets, or under an entirely separate investment heading. Most UK companies favour a separate heading, although a few include such items in current assets and a very small number in fixed assets. In the USA investments are usually shown under a separate heading where they are made for the purposes of control, affiliation or other business advantage. One of the major areas of current controversy relates to the treatment of substantial but not controlling interests in other companies, especially as far as income and valuation are concerned. The first ICA statement was on this subject,¹⁶ and there have been similar opinions¹⁷ and pronouncements in the USA. The recent USA survey did show, however, considerable differences of opinion still remaining concerning the valuation of investments in such cases. As far as subsidiary companies are concerned legal regulations in the UK do seem to have produced more consistency regarding treatment and presentation than is the case in the USA, where over one-third of companies do not at present consolidate all their North American subsidiary holdings. This heading will undoubtedly occupy a very prominent place in balance sheet examinations over the next few years, and obviously deserves far more consideration than this article can provide.

Other balance sheet headings

Current and long-term liabilities do create some difference of opinion, especially with some borderline items which might appear under either heading, e.g. UK taxation based on the current year's profits, but not payable for at least one year. Long-term liabilities such as loans and debentures (usually described as long-term debt in the USA) are usually shown next to share-

holders funds, although a small number of UK companies (under 10 per cent) deduct such items from total or fixed assets. There is some confusion about other long-term liabilities, e.g. pension or retirement plans, compensation, etc. especially when the vertical type of presentation is adopted. Generally they are regarded as part of capital employed but in some cases they are deducted from assets, together with current liabilities.

Current assets apart from stock do not create any great difficulties. Debtors (described as receivables or accounts receivable in the USA) are shown in a similar manner in both countries, although USA companies seem to provide more information on possible bad debts. Factoring is probably used to a much larger extent in the USA, and one-eighth of the balance sheets examined mentioned that receivables were being used for financing. Information provided in UK balance sheets on the use of debt factoring is very small, although one assumes that an increasing number of companies are using this short-term method of finance.

Additional accounting statements

One of the most significant recent developments in accounting statements in the USA has been the widespread publication and acceptance of funds flow statements. These statements, which are usually concerned with the sources and applications of working capital, are produced by over 90 per cent of USA companies (21 per cent in 1955), as compared with 14 per cent in the UK. The form of the statement does vary considerably as those who have examined UK statements will know only too well. The information contained therein is, however, being accepted as of very great value, especially by those financial analysts who are very much concerned with company liquidity. This statement is not compulsory in either country at the present moment, although an official USA opinion¹⁸ did suggest that they were extremely useful as supplementary information. It seems probable that an exposure draft will be issued on this subject in the UK in the near future.

Many companies now provide an historical review of some of the more important items that have appeared in the accounts in past years. In the USA nearly 90 per cent of companies provide such a statement covering a period of five years or more. In most cases the statement provides both operating and balance sheet data. In the UK 77 per cent of companies provide historical summaries. In both countries the ten-year statement is now most popular, with about one-half of the companies involved providing such statements. In many companies this is a fairly recent development, and it is encouraging to see how widespread this

¹⁶ Accounting Statement No. 1, 1971.

¹⁷ See Opinion No. 10.

¹⁸ APB Opinion No. 3.

practice has now become, in addition to the more normal practice of providing data for the previous year.

Conclusions

This article has attempted to examine very briefly some of the more important similarities and differences in UK and USA published accounts. Those who desire to examine items in more detail should refer to the publications already mentioned. Obviously administrators in both countries can learn a considerable amount from an examination of each other's legislation, recommendations, and the general content and presentation of the annual report and accounts. There are many similarities, although this does not necessarily mean that items are being dealt with satisfactorily. The main accountancy bodies in both countries are thinking very hard about possible statements and opinions in order to produce more consistency and comparability in published accounts. There are also many differences, and in some respects it does seem that we are definitely in advance of the USA in general presentation and in the compulsory disclosure of some very worthwhile and important accounting information. On the other hand there is much that we can learn from the USA and some of the more important questions that come to mind can be summarised as follows:

1. Why cannot UK companies provide more information on the actual cost of goods sold? The disclosure of sales figures where sales exceed £50,000 was made compulsory by the Companies Act, 1967,¹⁹ but there was no similar provision regarding the cost of goods sold. As a result only seven out of 300 companies provide this type of information. Many companies would claim that the disclosure of this information would be providing competitors with invaluable accounting data. This argument was put forward, however, when sales disclosure was being argued about, but since disclosure was made compulsory in 1967, companies have not claimed any substantial damage. In the USA disclosure of the cost of goods sold does not seem to have damaged quoted companies. Compulsory disclosure of this information in the UK is probably some way off and should perhaps be restricted to public companies, but there seems little reason why the largest UK companies should not now begin to provide more voluntary information on this type of expenditure.

2. Why cannot more precise and detailed information be provided on the methods of stock valuation and

depreciation? The present system in the USA is by no means ideal, but more detailed information on these items is certainly provided in that country. There seems little reason why UK companies should not disclose the methods and rates of depreciation adopted for different types of assets, and any differences that may exist between book and taxation figures. As far as stock and work-in-progress is concerned one would like to see a breakdown of stock into a number of relevant categories, e.g. finished goods, work-in-progress, raw materials, etc. More information is also required on the precise methods of stock valuation, especially on the definition of cost, e.g. what overheads, if any, are included in stock figures, and what approach has been adopted to overall valuation (FIFO, average or standard cost, etc.). Action is required urgently on this subject, and this may come about through a statement on the disclosure of accounting principles that is expected to be produced on this subject in the near future.

3. Why cannot the vast majority of UK companies provide information regarding their sources and uses of cash and/or working capital. This is now generally accepted in the USA, but developments have been much slower in the UK. These statements are not intended to take the place of traditional accounts, but are designed to provide much needed supplementary information on company liquidity. Some companies claim that analysts can prepare these statements themselves, but this can be an extremely difficult task, and it is no real justification for a refusal by companies to supply this relatively simple statement. Once again an exposure draft is expected on this subject, but in the meantime it is hoped that there will be a definite increase in the provision of this type of information.

In these three areas of accounting information we can definitely learn from practice in the USA, just as we are currently considering USA practice with regard to extraordinary profit and loss items. Similarly these are many areas where the USA can learn from us, and it is hoped that in some areas where practices are at present equally unsatisfactory we may take the lead in future developments. There does appear to be some possibility of this in the consideration of price-level accounting going on at the present moment. In the long run there must be increased disclosure of relevant accounting information, and it is hoped that this article has helped to pinpoint some areas where improvements can be obtained without too much difficulty or controversy, and other areas where inevitably there will be considerable differences of opinion but on which some positive action is definitely needed.

¹⁹ Schedule 2, 13A

A Risk Analysis Approach to Marginal Cost Pricing: a Comment

J. F. Flower

In an article in the first issue of *Accounting and Business Research* John Sizer described how risk analysis could be applied to the problem of fixing prices under conditions of uncertainty – i.e. when there is doubt about the precise amount that will be sold at a given price. Since almost all pricing decisions are made under these conditions clearly this method has great relevance. I believe that risk analysis is a great advance over those methods which use only a single estimate of the quantity sold at a given price. However I also believe that the method as used by John Sizer contains a weakness that seriously reduces its practical value.

The weakness is in the way that John Sizer describes uncertainty. He uses the discrete probability density function, which states (for any given price) the probability of a certain quantity being sold. Table 1 (reproduced from his article) gives the discrete probability

TABLE 1
Probability of selling certain quantities
when selling price is fixed at £18.00

p	q
0.20	6,840
0.50	7,600
0.30	8,360
1.00	

density function when the selling price is fixed at £18.00. The objection to this way of describing uncertainty is that it allows for only three possibilities. A verbal translation of Table 1 is: 'given a selling price of £18.00, there are three possible outcomes – a 20 per cent chance of selling 6,840 units, a 50 per cent chance of selling 7,600 units and a 30 per cent chance of selling 8,360 units'. In most cases this is an inadequate, even wrong, description of the situation. In fact the probability of selling exactly 7,600 units is minute. John Sizer recognises this for he writes: 'It will be

appreciated that the decision-maker is not saying that at a price of £18.00 there is a 50 per cent probability of selling *exactly* 7,600 units . . . In the original calculation 7,600 units as the most likely estimate was taken to be representative of the whole range of possible values.' In my opinion this is not good enough – for two major reasons:

1. Table 1 *does* in fact state that there is a 50 per cent chance of selling *exactly* 7,600 units. All subsequent mathematical analysis is based upon this statement and depends upon it for its validity.
2. Managers are confused at being asked to describe uncertainty in terms of the precise figures used in Table 1. They do understand the precise meaning of Table 1 and reject it as nonsensical. Often they find it impossible to provide the researcher with the precise information necessary to complete the table. Furthermore seeing that the whole analysis is based upon figures which they regard as meaningless they will lose all faith in the whole process.

All that is required to rectify the situation is a better method of describing uncertainty. As John Sizer indicated in his footnote 12, this is already available in the form of the continuous cumulative probability function. Essentially this function is based upon answers to the question: 'What is the probability that sales will be less than X units.' An example of such a function is given in Table 2, which in fact uses the same data as Table 1. It describes the manager's feelings about future sales in a way consistent with Table 1 – however in my opinion in a much more

TABLE 2
Probability that sales will be below the
stated amount, given a selling price of
£18.00

p	q
1.00	8,740
0.70	7,980
0.45	7,600
0.20	7,220
0.00	6,460

realistic and sensible way. Table 2 states that there is no chance of sales being less than 6,460 units. Whatever happens sales will be 6,460 units or more. Similarly it states that there is no chance of sales being more than 8,740 units. This may not be immediately obvious, but a moment's reflection will indicate that this is the necessary inference from the data in Table 2. If there were a 1 per cent chance of sales being over 8,740 units, then the probability of their being less than 8,740 units would be 99 per cent – not 100 per cent as given. The chance of sales being between 6,460 and 8,740 units can also be calculated: it is 20 per cent. This is a similar statement to that in Table 1 which gives a probability of 20 per cent of selling exactly 6,840 units. However Table 2 gives a range of possible values for sales – not an exact quantity – and as such is much more sensible. Further calculations using the data of Table 2 indicates that there is a 25 per cent chance (0.45 less 0.20) of sales being between 7,220 and 7,600 units, a 25 per cent chance of their being between 7,600 and 7,980 units and a 30 per cent chance of their being between 7,980 and 8,740 units. These ranges and probabilities are implicit in the data of Table 2. I believe that most managers would understand the meaning of the data in Table 2 and would make a reasonable effort to supply the necessary figures. Thus most managers would be prepared to hazard a guess as to the minimum and maximum sales quantities. The intermediate figures may be more

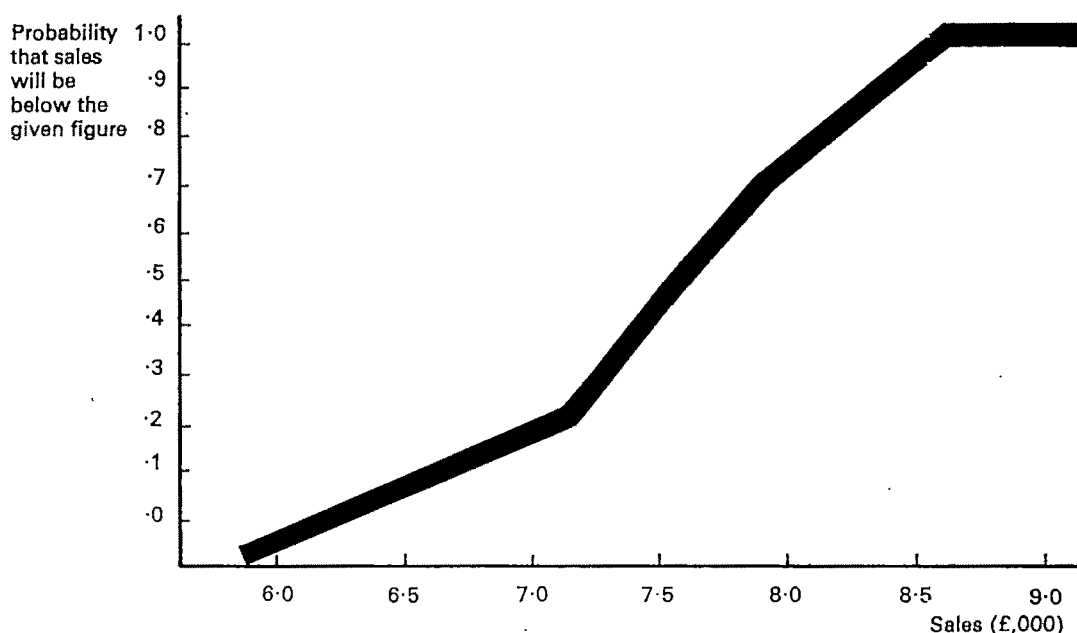
difficult to arrive at, but it is not necessary for the manager to use exactly the terminology of the cumulative frequency distribution. Table 2 could be constructed from the following hypothetical remarks of a sales manager: 'Sales will most likely be around 7,600 units. There is no chance that they will be above 8,740 units or below 6,460 units. There is a one in five chance of their being below 7,220 and a three in ten chance of their being above 7,980 units.'

The distribution described in Table 2 is continuous; it allows for the possibility of the sales quantities taking on different values between the points stated in the table. In fact Table 2 indicates nothing about these precise values so the assumption has been made that between any two points given in Table 2 (say between 6,460 and 7,220 units) each sales quantity has an equal probability of being achieved. This is a very reasonable assumption. Its effect is best illustrated by means of the graph of the cumulative probability function given in Figure 1, which shows straight lines between the known points.¹

¹ If it is thought that this is an inadequate description of the uncertainties – that a smoother curve is desirable – this would indicate the necessity of questioning the manager further in order to establish further points on the distribution. However, in my opinion, normally this would be wasted effort: an attempt to introduce greater accuracy in a situation where it probably does not exist (the manager will have extreme difficulty in stating his probabilities more precisely) and where its influence on the final result will be negligible.

FIGURE 1

Cumulative probability function (Selling price £18.00)



The equivalent continuous cumulative probability distributions for the other variables used by John Sizer appear in Tables 3 and 4. Tables 2, 3 and 4 specify the input used to calculate a statement of the expected outcome of each possible strategy (fixing selling price at £18.00, £18.50 or £19.00). This entails a great deal of calculation and therefore is best left to a computer. The most difficult parts of the

TABLE 3
Probability that sales will be below the given quantity

Selling price £18.50		Selling price £19.00	
<i>p</i>	<i>q</i>	<i>p</i>	<i>q</i>
1.00	8,280	1.00	7,590
0.70	7,560	0.80	6,930
0.40	7,200	0.55	6,600
0.10	6,840	0.30	6,270
0.00	6,120	0.00	5,610

TABLE 4
Probability that unit marginal cost will be below the given amount

<i>p</i>	£
1.00	13.125
0.80	12.375
0.52	12.000
0.10	11.750
0.00	11.250

computer programme deal with the processing of the cumulative frequency distributions of the input and the analysis of the output. In fact these tasks can be performed by subroutines – sub-programmes written beforehand by professional programmers that are available in the computer's 'library' ready for use as and when required. These subroutines take a considerable amount of time to develop. Those used to process the data of Tables 2, 3 and 4 were developed by Mr K. N. Bhaskar and myself at the London School of Economics over a two-year period. However once the subroutines have been written, the variable cost of using them is very small. A short computer programme is written that 'calls' the required subroutines and indicates how they should be used.

The programme used in this case was trivial. It took

some twenty minutes to write and used up about 17 seconds of computer time. It produced as output the statistics given in Table 5 and six graphs, two for each

TABLE 5
Total contribution

Selling price	Expected value	Standard deviation
£18.00	£45,544	£4,833
£18.50	£46,817	£4,379
£19.00	£45,165	£4,351

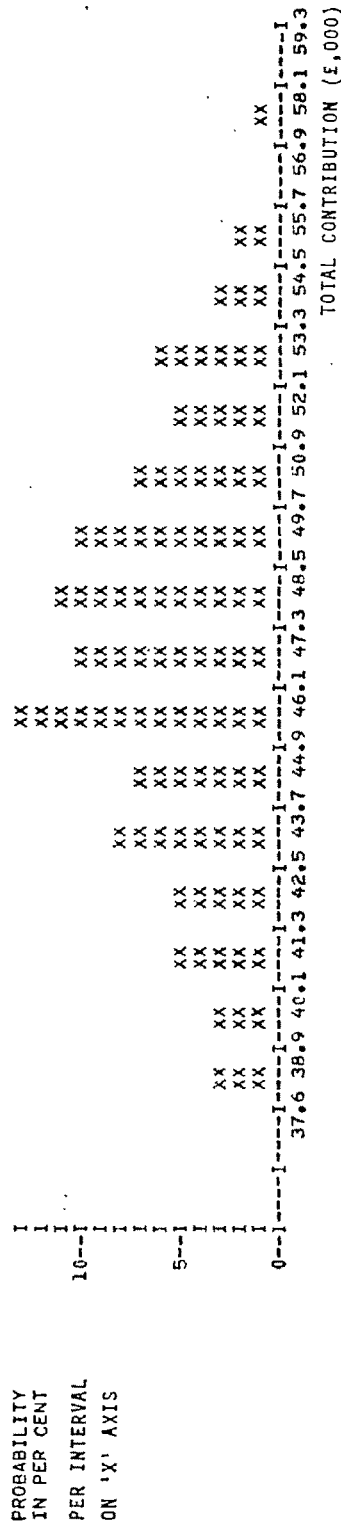
strategy. Those for the selling price of £19.00 are given in Figures 2 and 3. It is up to the manager himself whether he prefers to use the statistics or the graphs; most managers will probably use both. In fact the graphs present more information in a less condensed form. Figures 2 and 3 present identical information in rather different ways. Figure 2 is the probability density function. The probability of a particular contribution being achieved is indicated by the height of the curve about the x axis. Figure 3 is the cumulative probability function; here the probability of a particular contribution being achieved is measured by the steepness of the curve's slope. Since it is easier for the eye to gauge the height of the curve rather than its slope, most managers would probably prefer to use the probability density function. Personally I prefer to use the cumulative probability function: it presents the output in a way consistent with the input and the meaning to be attached to what is measured on the y axis is far clearer with this function than with the probability density function. As can be seen from the example given in Table 2, the precise meaning to be attached to what is measured on the y axis is rather complex.

I hope that this short note has made it clear that the use of risk analysis in pricing decisions is both a realistic and an economic proposition. The modifications that I have suggested to John Sizer's basic method are desirable in that they make the whole process more meaningful, and hence more likely to be applied in practice. The use of a computer makes the complex calculations feasible; in fact it reduces the computation cost to such a small sum that this cannot now be a bar to the use of risk analysis. I would like to join with John Sizer in urging its more widespread use in industry.

SELLING PRICE £18.50

PROBABILITY DENSITY FUNCTION

FIGURE 2

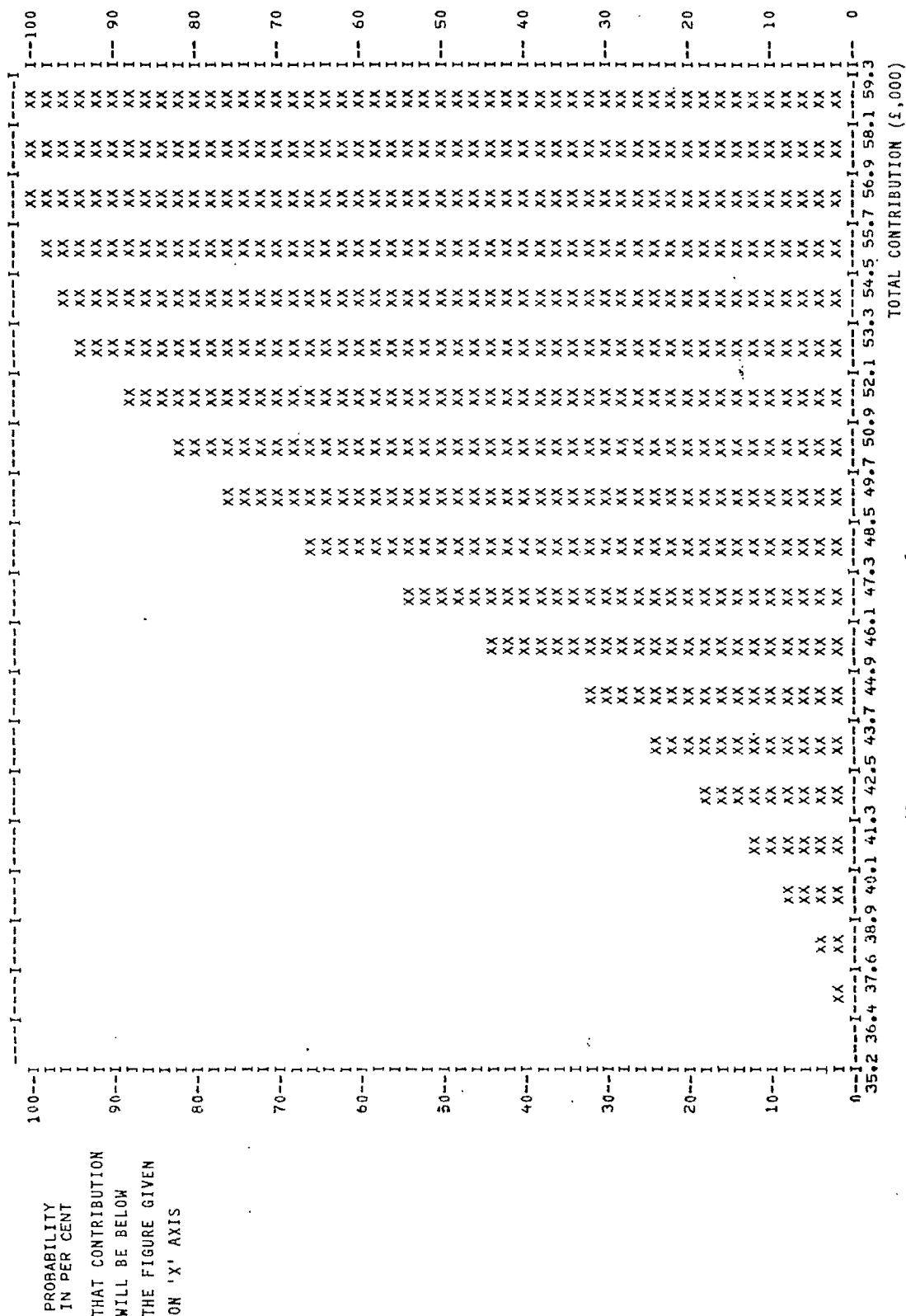


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.4968998900E+02	.5089410275E+02	.5209821650E+02	.5330233025E+02	.5450644400E+02	.5571055775E+02
.5691467150E+02	.5811878525E+02	.5932290000E+02			

CUMULATIVE PROBABILITY FUNCTION

FIGURE 3



Contributors to Accounting and Business Research

Volume 1 No 4 Autumn 1971

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Ltd until 1964. He then took up the post of Farm Management Liaison Officer at Nottingham University. He had been particularly interested in the provision of suitable accounting methods to assist the management of farm businesses. His main publications are 'Farm Management Accounting' and 'Methods of Appraising New Capital Investment in Agriculture' and he has just been awarded the degree of MPhil at Nottingham University for work in this field.

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Accountants and the Tax System

C. T. Sanford and P. N. Dean

1. Introduction – the research

This article is based on data derived from a research project on the hidden costs of taxation undertaken by a small research team at the University of Bath.¹ The research sought to identify and, where possible, quantify some of these hidden costs; in particular, although not exclusively, it was concerned with 'compliance' costs – costs in time and money which taxpayers are obliged to incur in meeting the requirements of the tax system, over and above the tax payments they make to the Revenue. The emphasis of the study was on the hidden costs of personal direct taxes, but some incidental evidence emerged from the survey on other costs, particularly those connected with corporation tax. The kind of question which the research sought to answer was: 'What are hidden costs?'; 'How heavy are they?'; 'What are their characteristics?'; 'Which taxpayers incur most hidden costs?'; 'Which are the parts of the tax system which particularly give rise to hidden costs?'. The researchers hope that in lifting the veil a little on 'hidden costs' the existence and nature of these costs may be more clearly recognised and taken into account in the on-going attempts at tax reform.

The research was made possible by grants from the Social Science Research Council and the P. D. Leake Trust; the authors wish to express their thanks to both bodies. Thanks are due to the many hundreds of people who gave time and often special expertise to assist the research. It is not possible to list them all, but for that part of the research presented here special mention should be made of the past President of the English Institute of Chartered Accountants, Mr C. Croxton-Smith, who kindly commended the research to his members; to Mr S. Kitchen, Mr D. R. Gray and Mr D. J. Ironside of the Institute who

generously acted as an advisory committee; to Mr D. S. Morpeth, who first encouraged the Council of the Institute to give their general blessing to the project; to Mr H. R. Clark, Under-Secretary (Technical), for continued helpfulness; to Mr J. Llywelyn Jones for some very perceptive comments on the draft; and not least, to the large numbers of accountants who filled in questionnaires and allowed themselves to be interviewed – without whose help nothing at all could have been accomplished. We sincerely hope that they will feel that the results justify the trouble they took.

The research in its entirety consisted of a two-stage sample survey of personal taxpayers; a survey of tax advisers covering accountants and the income tax departments of banks; a study of the tax queries received by enquiry bureaux of newspapers and those received by Citizen's Advice Bureaux. This report is concerned with one aspect only of the research study – the survey of accountants.²

2. The accountants' survey – method and scope

The survey of accountants was conducted by mail questionnaire, by interview and by a supplementary questionnaire (referred to throughout this report as the 'supplementary questionnaire' to distinguish it from the original main questionnaire).

Methodology

The objective was to survey a representative sample of all accounting firms in private practice in England and Wales so that, within the limits of normal random sampling errors, it would be possible to generalise about the whole. The latest membership lists of four professional bodies provided the source of the sample frame: The Institute of Chartered Accountants in England and Wales, The Institute of Chartered

¹ The authors wish to acknowledge the help of Mrs D. Fears of Bath University who advised on the statistical aspects of the enquiry and of Mr B. Epps and Mr W. Moger who assisted in analysing part of the data.

² The findings of the whole research study will be published in book form towards the end of 1972 or early in 1973.

Accountants of Scotland, The Association of Certified and Corporate Accountants, and The British Association of Accountants and Auditors. The Chartered Accountants of England and Wales were of overwhelming importance in the sample with Certified and Corporate Accountants providing a sizeable minority of the whole, and indeed, a majority of sole practitioners; the number of members of the other two bodies was naturally comparatively insignificant. The sample was restricted to practising accountants (who are distinguished in the institute membership lists from the qualified man not in practice) following their profession in England and Wales and the unit sampled was the branch, not the firm or practitioner (although, of course, with single branch firms, firm and branch are identical and with sole practitioners the practitioner for these purposes is the firm). The branch rather than the firm was chosen as the unit because we learned that most firms with branches kept separate branch accounts and thus many of our questions could only be answered at branch level.³ The consequences of choosing the branch as the unit were that the probability of a firm being chosen was a multiple of the number of its branches; and that sampling by branch gave a more representative geographical coverage than sampling by firms, which would have heavily over-weighted London and provincial capitals.

The procedure followed was to list all branches according to size, as measured by number of partners; particular problems arose with mixed membership firms, where the size of firm had to be estimated by cross-references between the membership lists. We identified 7,714 separate branches of professional accountants in England and Wales. The sample was made directly proportional in size to number of branches for each branch size of up to ten partners; but to have used the same proportion for partner sizes of 10 to 15 and 16+ would have given us only 9 and 5 branches respectively in our sample in those ranges; a poor response or abnormality in a single respondent branch would then have resulted in unrepresentative results. Hence the number of branches in the sample was weighted by a factor of two for partner size 10 to 15 and a factor of four for partner size 16+.

Within each size group the branches to comprise the sample were chosen by systematic random sampling methods. Table 1 summarises the composition of the sample by size groupings.

Members of the sample were sent a copy of the questionnaire, an accompanying explanatory letter

TABLE 1
Sample construction for questionnaire and interview

Partner size	No. of branches	Sample size		
		Un-weighted	Weight	Weighted
1	2,309 (29.9)	60	1	60 (26.8)
2-3	3,064 (39.7)	79	1	79 (35.3)
4-9	1,815 (23.5)	47	1	47 (21.0)
10-15	348 (4.5)	9	2	18 (8.0)
16+	178 (2.3)	5	4	20 (8.9)
Total	7,714 (100)	200		224 (100)

Percentage in brackets

inviting their assistance and a pre-paid printed post-card which contained boxes to be ticked for acceptance or refusal, and a space for the name of the person to be approached for arrangements to interview. Those who agreed to complete the questionnaire but did not want an interview returned the questionnaire directly by post; those who agreed to an interview were sent a copy of the interview schedule shortly before the interview and their questionnaires were normally collected by the interviewer. Those who refused outright sometimes did so by return of the printed card, sometimes by letter. Those who failed to reply at all were reminded by a second letter, accompanied by a further copy of the questionnaire, indicating that even a partial completion would be helpful; if this were not possible they were asked to complete a short form indicating their reasons for non-response.

A number of letters in reply to the original request explained why the writers felt they could not co-operate; we encouraged every sign of willingness to help and some accountants who felt unable to complete the questionnaire agreed to be interviewed. Others wrote with queries, mainly of two kinds: problems of the consistency of the data for the two years on which information was sought, e.g. because of a merger; and queries arising from the nature of the branch chosen, e.g. that it had ceased or was only a postal address or dealt only with particular (non-tax) matters. In the first group of cases, if the firm in our sample had completely lost its identity we were prepared to accept data for the firm which took it over; but where the firm had not lost its identity we sought 1970 data relating to that firm only, despite the fact that it now constituted part of a larger organisation; where data on a comparable basis could not be provided for 1965 and 1970, we asked for 1970 data only. In the second case, where the branch chosen in the sample was inappropriate we substituted another branch which did the work of the non-available branch.

³ Our subsequent experience suggested that small firms with several branches more generally kept one set of records for the firm; large firms kept separate branch records.

TABLE 2
Overall response rates

	<i>Question- naire and interview</i>	<i>Question- naire only</i>	<i>Interview only</i>	<i>Question- naire and/or interview</i>	<i>Refusals</i>	<i>Non- respondents</i>	<i>Total</i>
Number	48	22	12	82	80	57	219
Per cent of maximum potential response	21.8	10.0	5.5	37.4	36.5	26.0	100

Response rates for questionnaire and interview

In five of the 224 cases comprising the sample, the questionnaire was returned 'address unknown' or we were informed that the practice had ceased, leaving a maximum potential response of 219. The overall response rates are set out in Table 2. Eighty-two accountants (37.4 per cent) completed a questionnaire and/or were interviewed.

The non-respondents were those from whom no reply at all was received. The refusals included 42 who replied by the standard card and 38 who gave some reason for refusing; sometimes the 'reason' given was insufficiently explicit to be meaningful, e.g. 'not in a position to help' (2); but of those who provided meaningful answers the largest number, 12, said that they were too busy; 11 indicated that the information was not available or the figures were not helpful; seven said they were too small and four mentioned mergers or internal reorganisations.

A more detailed breakdown suggests that response was highly and positively correlated with sampled size. Table 3 shows the combined response rates for questionnaires and for interviews by branch size according to the sample data, but, as we explain below, there are considerable discrepancies between actual size and sampled size.

TABLE 3
Response rates by sample size of branch

<i>Size of branch by No. of partners</i>	<i>Question- naire response</i>	<i>Interview response</i>	<i>Question- naire and/or interview response</i>	<i>Maximum potential response</i>
0-1	6 (10.7)	5 (8.9)	10 (17.8)	56 (100)
2-3	29 (37.2)	26 (33.3)	32 (41.0)	78 (100)
4-9	18 (38.1)	14 (29.8)	21 (44.7)	47 (100)
10-15	8 (44.4)	7 (38.9)	9 (50.0)	18 (100)
16+	9 (45.0)	8 (40.0)	10 (50.0)	20 (100)
All sizes	70 (31.8)	60 (27.3)	82 (37.4)	219 (100)

Percentages in brackets

The supplementary questionnaire

The supplementary questionnaire was a re-survey of a group of 24 of the sixty accountants who had already been interviewed, chosen on the basis of our subjective estimate of their reliability and willingness to help; we asked some of those who seemed to us, from our interview experience, to be both very knowledgeable and willing to accept a further burden on their time in the interests of the research. The objects of the supplementary questionnaire were two-fold: first, to obtain data which would enable us to present some of the findings which were emerging from the interviews in a more precise and quantitative form; second, to help in an assessment of some of the changes proposed in the budget of 1971, introduced after the completion of the interviews. Because the supplementary questionnaire included detailed questions on what fees the recipient would charge for certain hypothetical tax situations, it was thought proper to provide for anonymity of answers. Each accountant was sent a card with the questionnaire, to be posted to us separately from, but at about the same time as, the anonymous questionnaire was returned. We would thus know from whom replies had been received, but be unable to connect a reply with a particular firm. Of the 24 accountants sent the supplementary questionnaire 19 completed it - a response rate of 79.2 per cent. The actual size of the branches from which a supplementary questionnaire was received is set out in Table 4.

TABLE 4
Actual size of branches completing the supplementary questionnaire

<i>Size group</i>	<i>0-1</i>	<i>2-3</i>	<i>4-9</i>	<i>10-15</i>	<i>No information</i>	<i>Total</i>
Number of replies	1	9	8	1	1	20*

* Includes an unidentifiable branch from which a card but not a questionnaire was received

The scope of the inquiry

The questionnaire sought comparative data for early 1965 and for 1970 on the staff engaged in tax work, the costs incurred, the change in numbers of tax clients and in fees for tax work; also data with which

to compare these figures such as the staffing of the firm as a whole, changes in the total number of clients and total gross fee income. Questions were also asked on the relative profitability of different kinds of work.

The interview posed open-ended questions on those aspects of the tax code particularly costly for accountants to administer, the wording of the tax legislation, tax payer comprehension, inequities in the tax system, changes in the speed and efficiency of the Inland Revenue, and attitudes to avoidance. It also included questions on the growth and profitability of tax work – and concluded with an invitation to the respondent to comment on any aspect of the main direct taxes which seemed to him to be relevant to the purposes of the survey.

The supplementary questionnaire postulated a series of detailed situations mainly relating to capital gains tax, but also to income tax and surtax, requesting the accountant to estimate the fee he would charge for investigating, calculating and negotiating the taxpayer's liability with the Inland Revenue. It also contained questions on the possible effect of capital gains tax in encouraging clients to cling on to particular assets; on the old and the new exemption provisions for gains tax; and the frequency with which the services of professional valuers were required for capital gains tax cases.

Limitations and characteristics of the data

The data on which the analysis and findings are drawn suffers from distinct limitations. First, the sources from which the sample frame was constructed were out of date and inaccurate. Partly this deficiency is an inevitable product of time-lag between the date of preparation of data for a published membership list and its utilisation for the survey; even where membership lists are published annually, using the latest available list may still mean using data 18 months old. But the inaccuracies in membership lists were not the product of the publication time-lag alone; presumably the accuracy of the lists depends on members' willingness to keep their professional institutes informed of changes, and not all members do this conscientiously, as became obvious when we received replies such as 'This branch, or firm, ceased to exist five years ago'; or 'This firm was merged with X in 196X'. Deficiencies resulting from the failure to keep records up-to-date have been accentuated by the rapid changes in the constitution of partnerships. Between 1965 and 1970 amongst the 82 respondents to the survey there were 24 mergers or amalgamations, two reductions due to loss of a partner who set up on his own and two new firms established: thus more than one-third of the respondent firms had changed their structure between 1965 and 1970. Inevitably

these factors meant inaccuracies in the sample frame.

There were additional reasons for errors in the partner size of the branches used in the sample frame. An element of guess-work entered into the estimation of the partner size of firms of mixed membership; further, the number who were nominally partners according to the membership list is not the same as the number of full-time working partners of a branch. A comparison of the *actual* size of the seventy branches for which data was collected by questionnaire with the *sample* size of the same firms showed that only in 37 out of the 70 did the actual and sample size correspond. The biggest discrepancy arose from an over-estimation in the sample frame of the number of working partners of branches of the larger firms, where not one of the nine branches recorded in the sample with a size of 16+ partners proved to be in that actual size category.

Clearly the use of the branch as the basic unit carried difficulties of its own and the occasional substitution of other branches for that chosen (as outlined above) reduced the representativeness of the sample; but as we have indicated, there is reason to believe that the use of the firm as the unit would have produced even less satisfactory results.

A further important limitation of the data derives from the comparatively poor response rate, especially in the smallest size of firms.⁴ Added to this is the problem that not all firms who did respond were able or willing to complete the whole of the questionnaire. The changes in the constitution of practices, already referred to, reduces the number for which comparative data is available for 1965 and 1970; and, even where there had not been such changes, not all firms were able to provide the figures which we sought.

What are the implications of these deficiencies for the research findings? They mainly affect the use to which the data from the questionnaire can be put. If the responses could have been regarded as an accurate representation of the firms in each size category, within the normal limits of random sampling, then it would have been possible to estimate the total fees paid to accountants for tax work and hence to measure, for England and Wales, probably the largest single element in the compliance costs of direct taxation. The deficiencies in the data make the results of any such attempt too unreliable to be worth pursuing.⁵

⁴ Many accountants were doubtless put off by the time required to complete the questionnaire properly. Had interviews only been sought, response would have been higher. But precisely because the data for the questionnaire required some searching in the firm's records, it was not of a kind to which spontaneous answers could be given in an interview.

⁵ In the full research study, data collected from personal taxpayers does enable an estimate to be made of the total sums paid to accountants for personal tax work.

What can be obtained from the questionnaire is a rather more qualitative assessment – clear indications of direction of change and its broad order of magnitude, but not precise measurement. The deficiencies are less serious for the validity of the interview data or the supplementary questionnaire, where there was never any intention of trying to ‘gross up’ the findings to obtain an aggregate figure for the whole country.

It would indeed be misleading to leave the impression that the data was completely lacking in representativeness. The careful compilation of the sample has ensured that there is useful research data from firms of all sizes with a wide geographical spread throughout England and Wales. What is lacking, however, is the data on the total actual numbers of practices of each size group against which could be placed the practices actually included in the survey, so that the representativeness could be precisely judged and the numerical results of the sample grossed up to provide reliable figures for the whole ‘population’.

Henceforward in our study, analysis is related to actual rather than sample size. The actual size of the 70 practices for which questionnaires were completed and the 60 where interviews took place is set out in Table 5, whilst Table 6 gives a picture of the geographical spread in England and Wales. Henceforward, too, the terms ‘branch’, ‘firm’, ‘practice’ or ‘partnership’ are used indiscriminately for branch as defined above.

A further component of the geographical picture is

provided by the facts that 16 of the 70 questionnaires (23 per cent) were completed by London branches, whilst the remaining 54 came in exactly equal numbers from towns with over 100,000 and towns with under 100,000 population. Of the 60 interviewees, 13 (22 per cent) came from London, 23 (38 per cent) from other towns over 100,000 and 24 (40 per cent) from towns under 100,000 population.

Two particular features need to be remembered in considering the survey findings. First, the timing of the survey – which is important for its relationship to tax policy measures; questionnaires were first despatched in September 1970 and the interviews took place during the Autumn and Winter of 1970–71. All interviews were completed *before* the budget of 30 March 1971; on the other hand, the Chancellor’s decision to replace investment grants by a new system of allowances was announced during the interview period: a minority of interviews preceded it, the majority followed it. The supplementary questionnaire followed the 1971 budget and was, indeed, partly framed to take account of its provisions.

The second point to be borne in mind concerns the nature of the interview. Whilst interviews all followed the same structured pattern, the questions were used as pegs for a fairly free-ranging commentary by the respondent. At all times special care was taken to avoid prompting; if a question was not understood a paraphrase was given but not an example and all the questions were open-ended. This means that if, say,

TABLE 5
Analysis by actual size of practices for which questionnaires were completed or/and where interviews took place

	Number of Partners					Total
	0–1	2–3	4–9	10–15	No information	
Questionnaires	12(17)	32(46)	19(27)	6(9)	1(1)	70(100)
Interviews	13(22)	24(40)	15(25)	6(10)	2(3)	60(100)

Percentages in brackets

TABLE 6
Analysis of geographical spread for interviews and questionnaires

Registrar-General’s standard regions	All interviewees	All questionnaires	Interviewees only	Questionnaire only
Northern	1	1	—	—
Yorkshire and Humberside	9	12	—	3
North West	6	10	—	4
East Midlands	6	4	3	1
West Midlands	2	3	—	1
East Anglia	3	1	2	—
South East	26	30	5	9
South West	5	5	2	2
Wales	2	4	—	2
Total	60	70	12	22

ten accountants make a particular point in answer to one of the questions, it does not follow that the other respondents disagree with this point; they might well agree, but we do not know, because they never thought of saying it at the time. Thus the numbers recorded as giving a particular response are the *minimum* who held this view.

3. Effects of tax work on the growth of professional accountancy

The five years from 1965-70 saw massive changes in direct taxation. New taxes were imposed: the long term capital gains tax and corporation tax were introduced; there was a 'once and for all' special charge; and investment grants replaced investment allowances. The period saw frequent tax amendments not only of the new taxes, which suffered serious teething troubles, but also of income tax, surtax, and estate duty. Further, during 1965-70, the overall level of taxation rose markedly; and tax revenue probably rose faster, both in monetary terms and as a proportion of gross national product, than in any peace-time period of comparable length in our history.

What effect did this have on the growth of accountancy work? Or, putting the point in terms of hidden costs of taxation, to what extent was there an increase in that part of compliance costs represented by the resources employed on tax work in the private practice of accountancy? Table 7 gives membership figures of The Institute of Chartered Accountants in England and Wales, the premier professional body of accountants in private practice. When allowance is made for the addition, in 1958, of the membership of the Society of Incorporated Accountants and Auditors, it can be seen that 1965-70 saw the largest absolute addition to membership of the Institute of any quinquennium in the last twenty years. To what extent was this increase in qualified accountants a product of the growth of tax work and how far did tax work lead to increases in ancillary staff? These are

TABLE 7
Growth in membership of the Institute of Chartered Accountants in England and Wales

Year (31 December)	Membership
1950	15,260
1955	18,772
1960	33,867*
1965	40,769
1970	49,725

* In 1958, 10,547 members of the Society of Incorporated Accountants and Auditors acceded to membership of the Institute

the kind of questions on which the research throws some light.

The main data on this topic derives from answers to the questionnaire, but the interview provided the occasion for a more subjective view of the rate of growth of tax work. The questionnaire sought information for 1965 and 1970 on the staffing of the firm and of the tax department where there was one; on the total number of tax clients in 1965 and 1970, and an estimate of the percentage increase in total clients of all kinds with which to compare it; and figures of fees for tax work in 1965 and 1970 which can be compared with an estimate of the percentage increase in annual gross fees for the partnership as a whole over the same period.

Staffing

Of the 70 firms which responded to the questionnaire, two had been formed since 1965 and 11 others were unable or unwilling to give figures on total staffing for both 1965 and 1970. Thus comparative data on staffing was provided by 57 firms. Twenty-two firms had tax departments in 1970; whilst 12 are recorded for 1965. Table 8 describes the firms for which tax departments are recorded in either or both of 1965 and 1970 according to partner size (1970). In at least

TABLE 8
Size of firms with tax departments, 1965 and 1970

Partner size	1965			1970		
	Tax dept	No tax dept	NI	Tax dept	No tax dept	NI
0-1	—	10	1	1	10	1
2-3	3	23	5	7	22	3
4-9	5	9	5	8	7	4
10-15	4	—	2	6	—	—
Total	12	42	13	22	39	8

One firm is excluded from the table because of no information on partner size.
Two firms, formed after 1965, are included in the 1970 figures only.

one case, a tax department served several branch offices.

As one would expect, there is a strong positive correlation between size and the existence of a separate tax department; in 1970 all the firms in the largest partner size group contained tax departments.

Of the ten firms which contained tax departments in 1970 but for which tax departments are not recorded for 1965, two were new firms formed between these dates; in three cases firms had clearly set up tax departments between 1965 and 1970; in the other five cases the tax departments may have been formed since 1965, but lack of staffing data for that year prevents us from being certain.

Of the 12 firms which we know to have had tax departments in both 1965 and 1970, one did not record data for total staffing in the earlier year. Thus, in comparing the relative change of staff engaged on tax work and total staff we are restricted to these 11 firms. Table 9 shows that for half of these firms the staff of the tax department has grown more rapidly than total staff, for half the opposite is true, whilst one firm registered a decline in both. More significant is Table 10, which aggregates the staffing data for these 11 firms. This shows that the staff in tax departments rose by 36 per cent whilst total staff increased by 26 per cent, and non-tax staff by 22 per cent. Thus the rise in tax staff was over 50 per cent more than the rise in non-tax staff. But of particular interest is

TABLE 9

Analysis of firms where the percentage growth in the tax department staff is more or less than the percentage growth in total staff

Partner size	Less	More
0-1	—	—
2-3	1	2
4-9	2	1
10-15	2	2
Total	5	5

The table omits one firm (4-9 size range) which declined both in total staff (16 per cent) and in tax department staff (50 per cent) between 1965 and 1970

the difference between the growth rates of different categories of staff. The outstanding feature of the Table is the extent to which the growth in tax work has required professionally qualified staff. Not much significance should be attached to the large percentage growth in partners engaged in tax work, because the numbers are so very small; but, if we take the first two categories of staff together, partners and other professionally qualified staff, the growth in professionally qualified tax staff has been 74 per cent; this compares with a figure for non-tax work of only 12 per cent.

Clients

The big and obvious limitation of the data on staffing

TABLE 10

Comparison of aggregate growth in tax department staff and other staff (11 firms), 1965 and 1970

Category of staff	Tax department staff			Non-tax staff			All staff (tax plus non-tax)		
	1965	1970	Growth per cent	1965	1970	Growth per cent	1965	1970	Growth per cent
1. Full-time working partners (including salaried partners)	4	9	125	63	68	8	67	77	15
2. Professionally qualified, other than partners (i.e. members of accounting institutes, ex- inspectors of taxes, members of Institute of Taxation)	19	31	63	146	167	14	165	198	20
3. Technical staff (including all those such as articled clerks directly involved in the professional work of the firm)	36	43	19	294	387	32	330	430	29
4. Non-technical support staff (e.g. typists, cleaners)	20	26	30	152	188	24	172	214	24
Total staff	80	109	36	657	810	23	737	919	26
Full-time working partners and professionally qualified combined (categories 1 and 2 above)	23	40	74	209	235	12	232	275	19

TABLE 11
Percentage change in numbers of tax clients, 1965 to 1970

Partner size (1970)	Decline by up to 40 per cent	No change	Increase of up to 40 per cent	No. of firms		Total
				Increase of 41 to 80 per cent	Increase of over 80 per cent	
0-1	—	1	5	1	1	8
2-3	1	—	12	8	1	22
4-9	1	—	10	2	—	13
10-15	—	—	2	1	—	3
Total	2	1	29	12	2	46

is that for only 11 firms can we compare the changes in tax staff and in other staff in 1965 and 1970. The questionnaire also sought information on numbers of tax clients and an estimate of the percentage growth of the total clients of the firm.

Forty-six firms provided data for this comparison. Table 11 analyses by size of firm, the percentage change in tax work between 1965 and 1970 in various growth or decline categories. All but three of the 46 firms registered an absolute increase in numbers of tax clients and 14 (30 per cent) had an increase in excess of 40 per cent.

Table 12 aggregates the numbers of tax clients for each size category of firms; it reveals an interesting tendency for the rate of increase in tax clients to decline with size of firm — perhaps a reflection of the tendency, which became apparent from the interviews, of many of the larger firms to discourage the small personal tax clients, who therefore find their way to the smaller firms.

TABLE 12
Growth in aggregate number of tax clients, 1965 to 1970 (46 firms)

Partner size (1970)	Total tax clients 1965	Total tax clients 1970	Growth in tax clients (per cent)
0-1	1,453	2,041	40
2-3	8,739	11,373	30
4-9	9,635	12,157	26
10-15	3,091	3,777	22
Total	22,916	29,348	28

But absolute figures of the growth of tax clients are not very meaningful; they may simply be a reflection of a growing average size of firm. More useful is the comparison between the increase in tax clients and the increase in total clients. These relative growth rates are set out in Table 13. This shows a majority, but not a large majority, of firms where the number of tax clients has grown more rapidly than the number of the firm's total clients.

It should be noted, however, that in many cases the difference in rate of growth of tax clients and total

clients is very small; in 25 instances (16 where the tax growth is 'more' and nine where it is 'less') the difference is under 5 per cent.

TABLE 13

Analysis of number of firms where the percentage change in tax clients is more, less than, or the same as the percentage change in total clients

Partner size	Less	Same	More
0-1	2	2	4
2-3	9	2	11
4-9	3	2	8
10-15	2	—	1
Total	16	6	24

Fees

Another indicator of the growth of tax work compared with other work is the relative rates of growth in fees. Thirty-eight firms provided data on the annual gross fees billed specifically as taxation work in 1965 and 1970 and also gave an estimated figure of the percentage increase in annual gross fees from all sources, 1965 to 1970.

Table 14 compares the growth rates and indicates that in 63 per cent of the firms fees specifically from tax billings had risen more rapidly than total fees. Moreover, the differences are more significant than with the numbers of clients. In all but one case, and that in the 'less' category, the difference in rate of growth of specific tax fees and in gross fees was more than 5 per cent. There is a particular difficulty in

TABLE 14

Analysis of number of firms where percentage change in tax billings is more, less than or the same as the percentage in gross fees

Partner size	Less	Same	More
0-1	5	—	5
2-3	8	—	11
4-9	1	—	6
10-15	—	—	2
Total	14	—	24

using fees as a measure of the growth of tax work: not all tax fees are billed as such. Some taxation work is done by accountants during the audit or as part of accounting duties, but is not billed separately as taxation services. Even when taxation services are billed separately, the tax fee is often smaller than it would have been had all the work specifically connected with taxation been taken into account. In the case of a sole trader who employs professional accountants solely to produce accounts for submission to the Inland Revenue, the whole or the greater part of the accounting fee can be thought of as tax originated. But in the case of a limited company the statutory duty to produce accounts means that a smaller part of the audit and accountancy fee is tax originated. In the questionnaire this problem was presented to the respondents in the terms in which we have now described it and they were then asked to estimate the amount of accountancy fees, under various headings, which arose only because their clients were subject to taxation. The answers relate to 1970 only; it did not seem reasonable to expect respondents to estimate for 1965. Thus we cannot attempt to assess the growth of these concealed tax costs. But 23 firms were able both to indicate their specific tax billings for 1970 and the accountancy fees originating in a tax consideration, under each of a series of headings; and a comparison gives some general idea of such costs; in total these fees are rather more than twice the size of the specific tax billings, but the proportion varies very much according to the nature of the client. Table 15 sets out the comparison.

TABLE 15 Comparison of specific tax billings and tax services billed as part of accounting fees, 1970			
<i>Type of client</i>	<i>(a) Specific tax billings</i>	<i>(b) Tax services billed as accounting fees</i>	<i>(b) as percentage of (a)</i>
	£	£	
Personal tax-payers, sole traders and partners	63,279	148,009	234
Trust	3,842	2,145	56
Close company	14,167	35,395	250
Unclose company	8,000	2,175	27
Total (23 firms)	89,288	187,724	210

Interviewees' estimates of growth of tax work

Besides the questions on staffing, clients and fees, which enabled us to obtain from the respondents to

the questionnaire some imperfect measures of the relative rate of growth of tax work, the 60 interviewees were also questioned on this issue. They were asked:

Do you believe that tax work has increased any faster than other kinds of work in your firm since early 1965?

The replies were as follows:

<i>Reply</i>	<i>Number of accountants</i>	<i>Per cent of interviewees</i>
Yes	48	80
No	9	15
No comment	3	5
Total interviews	60	100

Those who replied 'Yes' were further asked to categorise the rate of growth. The replies were:

<i>Rate of growth</i>	<i>Number</i>	<i>Per cent</i>
Very much faster	13	27
Much faster	17	35
Faster	11	23
Slightly faster	6	13
No comment	1	2
	48	100

Thus 80 per cent of the interviewees, and 84 per cent of those who were prepared to answer the question, thought that tax work had increased faster than other accountancy work since 1965; half the total interviewees thought it had increased much faster or very much faster.

Growth in different aspects of tax work

Respondents to the questionnaire were asked not only about the totals of tax clients and tax fees but also about the different categories of clients, so that some impression could be gained of the rate of increase in different kinds of tax work between 1965 and 1970. Table 16 shows that, whilst by far the biggest absolute increase was in the number of personal tax clients (including partners) there was very little difference in the percentage increases in the numbers of personal tax clients, corporate tax clients and trusts.

Table 17 records the rate of growth of fees for different kinds of tax work. As more firms gave comparative data on clients than on fees, the two tables are not precisely comparable.

Comments and conclusions

Our evidence about the effect of the growth of tax work on the private practice of accountancy is much

TABLE 16
RATE OF GROWTH of different kinds of tax clients 1965-1970 (50 firms)

Type of client for whom tax work performed	Number of clients		RATE OF GROWTH per cent
	1965	1970	
Personal taxpayers (including sole traders and partners)	17,952	23,082	29
Corporate taxpayers (each subsidiary of a group for which work is done counts as one client)	4,908	6,418	31
Trusts	967	1,289	33
Total	23,827	30,789	29

more fragmentary than we would wish. Each measure of the growth in tax work has distinct limitations; nevertheless the cumulative effect of the figures of relative growth of tax staff, tax clients and tax fees, together with the less quantitative assessments of the interviewees about the rate of growth in tax work, all point clearly in the same direction: there can be no doubt that tax work has been growing more rapidly than accountancy work in general; it has clearly been of considerable importance in helping to bring about the increase in the private practice of accountancy.

This is a conclusion which causes no surprise – indeed, in the light of the obvious changes in the tax system it would have surprised had this not been so. But the increase in tax work has not only promoted the growth of accountancy; it has also helped to effect changes in its structure – increases in the average size of firm both by the addition of new partners and by amalgamations, of which there were at least 24 amongst the 82 respondents to the survey between 1965 and 1970. It is clear from comments in the interviews that growth in the size of firm is sometimes sought as a means of achieving specialisation. Tax work increases the need for specialisation. Several firms, as we saw, had established a new tax department in these years; other accountants with whom we spoke were hoping to establish separate tax departments in the future. One interviewee stated that, with the current complexity of taxation, it was desirable for a tax expert to specialise in one tax only. Clearly, tax work played a not unimportant part in generating a need for specialisation resulting in a growth in the size of branches and firms.

Finally, the third and least expected finding to emerge from the survey: during the period 1965-70 the expansion of tax work appears to have made disproportionately heavy demands on professionally qualified manpower – a finding of some significance in assessing the hidden costs of taxation, which

TABLE 17
RATE OF GROWTH of fees for different kinds of tax work, 1965-1970 (33 firms)

Type of client	Fees billed as tax work		RATE OF GROWTH per cent
	1965	1970	
Personal taxpayers	£ 34,755	£ 66,790	92
Sole traders and partnerships	25,337	55,388	119
Trusts	4,801	9,594	100
Close companies	19,205	38,983	103
Unclose companies	16,900	37,815	124
Total fees billed specifically as tax work	100,998	208,570	107

mainly consist, in fundamental terms, of the real resources of manpower outside the Inland Revenue, which are taken up in operating the tax system.

4. The incidence of compliance costs

Compliance costs of complexity

One major reason for the growth in tax work undertaken by accountants has been the increasing complexity of the tax system. In the first interview question we sought to establish the significance of complexity in tax compliance costs by posing the question:

Can you point to any aspects of the tax code which, because they are highly complicated, are very costly for accountants to administer?

Of the 60 interviewees, two did not answer the question and two others declared that nothing came to mind; so effectively 56 accountants commented. Replies ranged widely over the field of direct taxation, but the most frequent references were to shortfall under corporation tax; PRIDs, Schedule F and PAYE administration; capital allowances and investment grants; double taxation work; cessation and commencement of partnerships; tax planning; and, pre-eminently, capital gains tax.

Shortfall was mentioned as costly to administer by 22 accountants; forestalling shortfall was very time consuming, especially presenting the argument that distribution would be prejudicial to business interests. But this was an area where skilled negotiation paid off – a good accountant could get very good results. Two accountants stated that balance sheet dressing was an effective method. In the view of a number of accountants the costs might be accentuated because of the attitude of the tax inspectors. One argued that when accounts were handed in you could not predict with certainty what the inspector would make of them. This hint of a criticism of the inspec-

torate appeared more explicitly in other comments, e.g. that each inspector interpreted the section differently (5). Two accountants compared the inspector unfavourably with the surtax office which, they held, took a broader attitude to surtax directions than the inspectors did to shortfall assessments; in their opinion, inspectors lacked sufficient commercial experience.

In view of this comment it was not surprising that it was suggested that shortfalls should be dealt with separately by a central Inland Revenue department (2). A rather different suggestion was to give tax inspectors more power of discretion so that they were not so bound to the book in settling cases (1). One accountant expressed the view that shortfall assessment, whilst initially a problem, had now ceased to be one.

Income tax references related particularly to *PILDS*, mentioned by 13 accountants. Four maintained that they were a farce, the figures made up or not filled in according to the requirements of law; another comment was that the limit was too low – unchanged since 1948 and eroded by rising incomes (1). Nine accountants in reply to this or the final open-ended question referred to the time-consuming nature of monthly accounting under *Schedule F*, especially when complicated by directors' loan account changes. Four accountants mentioned the costliness of maintaining a *PAYE* system where the client was too small to have a wages clerk.

Capital allowances were mentioned by three accountants in reply to this question – two of whom elaborated by indicating that the many differing bases made this area difficult. Two complained that waiting for confirmation of investment grants meant waiting to finalise tax liabilities and one other accountant mentioned the costliness of certificates for investment grants attesting that the client had spent the money. In reply to a later question, two others indicated their preference for investment allowances instead of investment grants.

Five accountants mentioned *double taxation work* as usually expensive of skilled time; one of these held that it had been simplified since the abolition of the net UK rate; another of the five mentioned that it was hardly worth doing most of the time because the costs exceeded the tax gains.

Four accountants mentioned changes in partnerships involving a choice in the application of *cessations and commencements* or the continuation provisions; two pointed out that in these cases capital allowances were often on a different time basis.

Two accountants referred to the costliness of *tax planning* on skilled time (although they added that it was not necessarily unremunerative) and three others

referred to the complications of the anti-avoidance provisions.

Capital gains tax

It was no surprise that capital gains tax emerged as the most frequent response to this question. What was surprising, in view of the open-ended nature of the questions and the absence of interviewer prompting, was the number of accountants who mentioned it. Of the 56 who commented on this question all but two (96 per cent) mentioned capital gains tax. It emerged as pre-eminently the tax which accountants found costly to administer because of its complications. Indeed, three respondents felt that an unfair part of capital gains tax work was done by accountants, thus lightening the burden on the Inland Revenue, e.g. the £50 exemption saved the Inland Revenue much work.⁶ The big problem was personal capital gains tax as distinct from that paid by companies, partly because companies kept more efficient records. It was seen as heavy on staff costs not only because it was time consuming but because it was difficult to delegate (4). The initial time spent in listing investments held was specifically referred to by 12 accountants as particularly burdensome, as was the up-dating of investment schedules (8). One accountant pointed out that capital gains tax was a heavy burden on the time of the taxpayer as well as the tax adviser. Four specifically mentioned that the differing basis for the long term and short term gains tax added complications. A further respondent mentioned the extra complication of continually changing rules since 1965.

Two big problems of the capital gains tax revolve around the closely interrelated issues of ascertaining the basic data and valuation.

Twenty-one accountants specifically referred to the *difficulty of getting basic data* from the clients and others provided examples which implied this. Especial difficulties of accurate data collection referred to were for pre-war acquisitions (5), particularly where a shareholding originated in a pre-war will (2); pre-1965 share acquisitions (16); and unquoted shares acquired at different times and values (4). Eighteen accountants stressed the difficulty of being sure that holdings have been accurately traced through rights issues, bonus issues, mergers, conversion of shares into cash or combinations of cash, debentures and shares, especially where the holding was pre-war.

⁶ The reader is reminded that, with the exception of the supplementary questionnaire, the survey was completed before the 1971 budget which altered the form of the capital gains tax exemption (see below, p. 14 and pp. 29–31). Here and subsequently, therefore, we record comments by interviewees on aspects of the tax system which have since been changed.

Two accountants stressed difficulties with solicitors and estate agents in acquiring data; that it was difficult to get information from them relating to a number of years back; and that they did not understand capital gains tax and made no attempt to produce data which would help from the tax point of view.

It was pointed out by one accountant that capital gains tax had not been in existence long enough for the office to have kept records for the personal capital gains tax client.

On *valuation*, quoted shares were referred to, not unnaturally, as the easiest aspect (5); but even these could be complicated by rights issues, bonus issues, takeovers, etc. Unquoted shares and other properties often posed a big problem of valuation (15), referred to by one accountant as a 'jungle' where in fact the accountant could be very valuable to his client. The valuation and negotiation of the value of unquoted shares for capital gains tax was highly skilled and highly complex (2). The valuation of unquoted shares was frequently referred to as 'arbitrary' (9), especially where retrospective valuations were needed for holdings acquired at different times: three complained that the share valuation division stuck too rigidly to the book; and two also complained of the 'enormous' delays in dealing with the share valuation division. Nine accountants stressed how difficult it was to make the election for 1965 valuation or a time valuation basis when the values for unquoted shares and property were not known at the time of the option.

Particular valuation problems arise with disposals not at arms length (5). Three mentioned *all* notional or deemed disposals as giving trouble whilst four specifically referred to the problem of deemed disposal at death where the class of asset is shares in a close company. Part disposals of property, land, shares, goodwill were mentioned in one form or other by six accountants: acquisition cost of part disposals was difficult to determine; and with land, the need to value the whole estate and opt for 1965 or original value irrevocably was felt to be a burden. (An Inland Revenue concession in certain circumstances to value only the disposed part had made the matter simpler.) Apart from part disposals, the problems of capital gains tax on land were not felt to be too difficult. (4).

Different views were expressed on the pooling provision and the option for a 1965 valuation relating to quoted shares, introduced in the 1968 Finance Act. One accountant felt that it was helpful where there was no information, such as brokers' notes, giving evidence of original cost; three others felt it could be very helpful, one particularly mentioning its usefulness with a small range of shares; one of these pointed out that as the 1965 valuation was high, it was often preferable. But more accountants disapproved

of the pooling provision and the option: 19 stressed the research that was involved; it did not save time because of the work necessary to discover whether it was worthwhile opting for it – all the more necessary because of its irrevocable nature: it was specifically referred to as a nuisance by many accountants, an added complication not a simplification.

These problems are reflected in the cost of capital gains tax work. Twelve accountants referred to cases where the cost of the computation was greater than the liability; five said that they frequently occurred; two mentioned part disposals as a particular area where cost exceeded liability; and one asserted that for all the capital gains tax work done in his office the accountants fees were greater than the total of negotiated liabilities. Three mentioned that it was common to do a lot of costly work to produce a nil liability. Two attributed the problem of high cost to liability in part to the low exemption limit – placed (at that time) on gains rather than proceeds, a point very clearly brought out by answers to the supplementary questionnaire (see below p. 30).

Cost to liability ratios

The answers just outlined were in response to a question referring specifically to high costs resulting from *complexity* in administration. A different but related question sought more generally to relate compliance costs (as measured by the resources used by accountants) to tax liability. Respondents were asked:

What taxes or parts of the tax system do you currently believe (a) have a low cost to liability ratio? (i.e. they are cheap for you to administer); (b) have a high cost to liability ratio? (i.e. are expensive for you to administer).

Six accountants gave no answer either to part (a) or part (b) of the question. Others, instead of referring to particular taxes or parts of the tax system, pointed out that much depended on the circumstances of the taxpayer. Thus two accountants replied that typically small liability cases fell in the high ratio group; or that, for example, the cost of capital gains tax depends on the number of holdings not on their value (2). Clearly the question often called for an elaborated or qualified answer rather than a short simple reply. Table 18 records the major responses; and a very clear pattern is apparent when allowance is made for the qualifications in the answers.

Capital gains tax was the tax almost universally regarded as high cost to liability; the only comment suggesting the contrary was specifically for large cases. Taxes on personal income as a whole did not fall predominantly into either category; administering PAYE for firms involved high cost; Schedule E taxpayers, low cost (as respondents mentioned, many of

TABLE 18

Numbers of accountants reporting various aspects of the tax system as having low or high cost to liability ratios

	Low	High
Capital gains tax	1	40
Aspects of income tax		
PAYE (administration for firms)	—	4*
Schedule E	9	—
Schedule D	11	15
Surtax	29	6
Corporation tax	24	5
Estate duty	2	4

* This rather surprising finding is explained by the fact that accountants only administer PAYE schemes for very small firms

the figures have been agreed before the accountant starts his work). Comments on Schedule D were divided; the areas of high cost particularly mentioned were small cases under Cases I and II (6), and Case VIII (3) because of estimated assessments and over or under charge. Surtax is predominantly low cost; the six comments to the contrary were either for small cases (5) or several sources of income (1); one of these respondents elaborated that the high cost in such instances might arise because of an appeal. Corporation tax fell predominantly into the low ratio category; the main exceptions arose in relation to close companies and shortfall. Estate duty received little mention; it was clear from those who did refer to it that the dominant factor was the size of estate – small estates falling into the high, and large into the low, cost to liability categories.

The supplementary questionnaire, answered by 19 accountants, provided figures of estimated fees charged by accountants for a series of hypothetical but realistic tax situations. Full details of questions and answers are given in the Appendix. Whilst there is considerable variation in the estimated fees of different accountants for the same situation, the main conclusion to emerge is that the tax liability is largely irrelevant to the fee charged by many accountants. About half the respondents specified this in the general comments they were invited to make. Fees generally depended on the amount of time taken, which in turn depended on the length and complexity of the work rather than the taxpayer's tax liability (or for that matter his income). The extent to which accountants were consistent in applying this principle of charging is illustrated by their answers to a series of questions where the question was identical save for a difference in tax liability. In the questionnaire these questions were dispersed and *not* put in juxtaposition to each other. Below these particular questions have been set out in juxtaposition (using the numbering

system in the Appendix for convenience of reference). A comment on the answers has been added.

Question 1. Capital gains tax

Approximate
tax liability
£

Calculate, negotiate and finalise gain for a particular tax year on disposal of chargeable freehold property valued currently at £12,000:

(a) where the entire property is sold having been acquired for cash before 1965	1,000
(e) where the entire property is sold having been acquired for cash before 1965	3,000

Number of cases where

same fee quoted for (a) and (e)	15
larger fee quoted for (e) than (a)	3
no comparison possible	1

Question 2. Capital gains tax

£

Calculate, negotiate and finalise gain/loss for a particular tax year on disposal of quoted shares from a portfolio whose market value is about £50,000. (It is assumed that your records of client's transactions are good and the appropriate reference books are readily available.)

(a) where the portfolio is made up of 10 separate holdings and the disposal is of 3 holdings only, originally acquired for cash since 1965, and not added to since except by way of bonus issues, etc.	1,000
(d) where the portfolio is made up of 10 separate holdings and the disposal is of 3 holdings only, originally acquired since 1965, and not added to since, except by way of bonus issues, etc.	10,000

Number of cases where

same fee quoted for (a) and (d)	16
larger fee quoted for (d) than (a)	2
smaller fee quoted for (d) than (a)	1

Question 4. Income tax

Calculate, negotiate and finalise a personal client's tax liability for a particular tax year.

(a) where the client's income is £4,000 for the year from one earned source from which tax was deducted under the PAYE scheme	1,000
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(c) where the client's income is £1,500 for the year from one earned source from which tax was deducted under the PAYE scheme

Number of cases where	
same fee quoted for (a) and (c)	14
smaller fee quoted for (c) than (a)	4
no comparison possible	1

200

Taking the series of cases (above) together, there are 55 pairs of answers relating to questions which were identical save for the amount of tax liability. In 45 cases (82 per cent) the same fee was estimated for each question of the pair. In certain other cases also (see Appendix Questions 4 (a) and (g); and (h) and (d)), the same question was asked twice except for a difference of tax liability; but here the higher of the two tax liabilities brought the taxpayer into the net of an additional tax, surtax; in these cases a majority of respondents estimated a higher fee for the higher liability. The figures in the Appendix illustrate very clearly how additional complications (e.g. problems of data discovery or of valuation with capital gains tax or a variety of sources of income under income tax) may multiply the fee charged.

The extreme example of high ratio of fee to tax liability (strictly speaking, a ratio of infinity) occurs where substantial costs are necessary to establish a nil liability – as often happened under the £50 exemption limit for capital gains tax (see p. 30).

Additional fees

Another point to remember with capital gains tax is that the accountant's fee is not necessarily the only professional fee the taxpayer has to meet to comply with the requirements of the tax system. Respondents to the supplementary questionnaire were asked to estimate the number of capital gains tax cases they had dealt with in the previous 12 months concerned with the disposal of assets such as real and leasehold property and personal chattels; and in how many of these cases a professional valuer had been employed, in order to negotiate and finalise the tax liability, who would not have been required but for capital gains tax. In aggregate (for 18 respondents) the answer was 508 cases, in 230 (45 per cent) of which a professional valuer had been required.

In addition many of the accountants interviewed said that they occasionally consulted counsel and in most such cases an additional fee would then be incurred by the client.

5. Profitability of tax work

If all tax work were charged strictly on the basis of time records and the same percentage profit margin

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applied to work by staff of different degrees of skill, including partners, then all tax work ought to be equally profitable. Indeed, if all accountants' work were charged on the same basis, tax work ought to have exactly the same profitability as all other work. Profits would then be directly related to the time and complexity of the work undertaken. We have indeed just been examining cases in which estimated fees were, in the majority of cases, related to work done and not to liability. But all our examples related to personal tax work, which might be charged at a lower rate than other kinds of work. In fact the questionnaire and interview made it very clear that there is not always an exact equation maintained between the amount of and quality of work done and profitability.

Profitability ratings by type of client

In the questionnaire accountants were asked to give a profitability rating ('more profitable', 'much more profitable', etc.) for each type of client for whom they performed tax work. The results are given in Table 19. Taking tax work as a whole, just under half the ratings make it as profitable as other work; 21 per cent put it more or much more profitable and 31 per cent rate it less or much less profitable. But there are marked divergencies according to the kind of client. Tax work for individuals has a low profitability; only 16 per cent give it an above average profitability, whilst 50 per cent put it below average, more than half of these rating it *much* less profitable. A somewhat similar picture emerges for sole traders and partners although without as much emphasis on the least profitable category.

Trusts occupy the middle ground: 56 per cent ratings are of average profitability, with the remainder slightly biased to unprofitability. 'Close' companies have a 50 per cent rating for average profitability and 31 per cent above average; 'unclose' companies have the largest proportion of above average profitability at 34 per cent. The numbers of firms in each size category are too small for a meaningful detailed analysis, but very broadly this pattern seems to hold for all sizes of firm.

Profitability ratings by tax category

The questionnaire also asked respondents:

Would you indicate any parts of the tax code which are (a) very profitable for you to administer; (b) very unprofitable for you to administer?

Forty-eight replies were received to the first part of the question, many of them containing more than one point. Twelve said specifically and uncompromisingly that there were *no* parts of the tax code which were very profitable to administer. Fifteen of the replies (31 per cent) referred to tax planning, of which 12

TABLE 19
Profitability ratings of tax work performed for different types of client as compared with other work

Rating	Partner size	Individuals	Sole traders and partners	Trusts	Close companies	Unclose companies	Total
Much more profitable	0-1	1	—	—	2	—	3
	2-3	—	—	1	—	1	2
	4-9	—	—	1	—	1	2
	10-15	—	—	—	—	1	1
	All firms	1 (2)	—	2 (4)	2 (3)	3 (8)	8 (3)
More profitable	0-1	2	—	—	3	1	6
	2-3	3	4	5	8	3	23
	4-9	1	2	2	3	4	12
	10-15	2	—	—	2	2	6
	All firms	8 (14)	6 (10)	7 (13)	16 (28)	10 (26)	47 (18)
As profitable	0-1	4	6	6	4	1	21
	2-3	11	15	12	14	8	60
	4-9	5	7	9	10	9	40
	10-15	—	1	2	1	1	5
	All firms	20 (34)	29 (50)	29 (56)	29 (50)	19 (50)	126 (48)
Less profitable	0-1	2	4	1	2	—	9
	2-3	7	6	5	6	5	29
	4-9	4	6	3	2	—	15
	10-15	1	3	1	1	—	6
	All firms	14 (24)	19 (33)	10 (19)	11 (19)	5 (13)	59 (22)
Much less profitable	0-1	2	—	—	—	—	2
	2-3	9	3	2	—	—	14
	4-9	4	—	—	—	1	5
	10-15	1	—	1	—	—	2
	All firms	16 (27)	3 (5)	3 (6)	—	1 (3)	23 (9)
	Column total	59(100)	58(100)	52(100)	58(100)	38(100)	263(100)

Percentages in brackets

Note: The column totals fall short of the total number of respondents to the questionnaire (70) and differ from each other because no information was given by some firms for some or all categories, and because some categories were inapplicable to some firms (e.g. they did not do tax work for unclose companies). One firm is excluded from the table because partner size is not known.

specified estate duty planning, and 14 (29 per cent) mentioned corporation tax. These apart, the remaining comments were widely spread, with repayment claims and Schedule D income tax, especially Cases I and II, being the next most frequently mentioned, with four references each.

Rather more accountants, 57, provided a usable answer on the parts of the tax code very unprofitable to administer. Only four said 'None'. Capital gains tax had the highest mention, by 31 accountants (54 per cent); personal income tax in one form or other came next with 24 mentions (42 per cent); and then PAYE administrations with 13 references (23 per

cent). Beyond these was a miscellaneous group of 15 mentions.

Comments recorded on the questionnaire and during the interviews enable us to fill in more detail. Capital gains tax is the main bugbear. Nineteen accountants in the interviews volunteered the view that some capital gains tax work was done at a loss or at less than normal profit and 11 maintained that capital gains tax made it difficult to make personal tax work pay. The small capital gains tax jobs were particularly likely to be done at a loss (5) and from the national point of view such liabilities, resulting in nil or small payments, were uneconomic in collection (3)

whereas large cases were economic (3). Many comments were made about the unwillingness of clients to pay for capital gains tax work and their dislike of paying fees when there is a nil liability. Four accountants said that the client cannot see that a large amount of work was necessary and has been done and thinks a large bill unjustified. Psychologically, as one accountant put it, it is easier to charge for work where there is a clear tax-saving, or at least a tax liability; one firm tended to lose personal capital gains tax clients because they would not pay the standard charge. However, two or three accountants maintained that capital gains tax work paid or could be made to pay; for one, the way to make personal capital gains tax work pay was to require the client to keep an investment register.

On the general profitability of personal tax work, four accountants in the interviews maintained that personal tax work was done at an absolute loss; six others that it was difficult to make it pay. Specific comments on aspects of the profitability/unprofitability of personal tax work were that small personal tax jobs are unprofitable or unwelcome (9); that personal cases with a small portfolio of shares are never profitable (3); that they were not interested in doing simple Schedule E work (2); that the attenuated nature of personal tax work makes it expensive (1). Several accountants mentioned that personal interviews with these clients are expensive and therefore kept to a minimum.

A few of the larger firms made it clear that they did not encourage personal taxpayers unless associated with client companies. Others were seeking to get across to the client the extent of the cost so that the charges could be stepped up to a more realistic figure without incurring client resentment.

In a number of cases of small personal taxwork where the clients were known to have small means, their tax affairs were being looked after at a nominal figure as a kind of social service. This applied particularly to widows with investment income, hard-hit by inflation or capital gains tax. Some accountants emerge from the interviews as 'father figures' like the image of traditional family doctor or solicitor.

The general conclusion on the profitability of tax work is that, whilst the accountant generally bases his charges on the time and complexity of the work, divergencies from this principle of operation are frequent. Notice is taken of what the client can bear; higher charges can be and are made for tax work from which the client obtains a major tax saving (like tax planning or repayment claims); there is also a tendency to charge the big client (the large corporation) at a higher rate than the small. At the other extreme, many accountants find it difficult to charge clients the

scale fee when there is a small liability or little to show for the accountant's work (as with much capital gains tax) or where the client is known to be of very limited means. In these circumstances the fees charged underestimate the real compliance costs.

6. The taxpayers' need for advice

We have been looking at the fees charged by accountants and the question of the profitability of tax work; but what does the taxpayer get for his fee? Put in another way, how serious is the taxpayer's need of advice? A number of the interview questions related to this issue: to taxpayers' understanding, or lack of it, of the tax system; to their failure to claim allowances; and to the frequency with which and extent to which they were incorrectly charged to tax.

Taxpayer lack of understanding

Accountants were asked:

Do you believe in the last five years that there has been any tendency for taxpayers to be less able to understand the manner in which they are taxed?

Of the 60 interviewees, 52 replied 'Yes' to the question, and five 'No'. Two gave no answer and one was 'doubtful'. About half those who answered 'Yes' qualified this in general terms: 24 of them said that this was a tendency only among those affected by a particular tax like capital gains tax; or, in some cases, a particular class of taxpayer, e.g. the 'average' or the elderly (9).

Seven accountants (of whom two had replied 'No' and five 'Yes') thought that there had been little or no change because most taxpayers had never understood the manner in which they were taxed. Two others added somewhat cynical comments: that the taxpayer has given up trying to understand; and that many taxpayers do not wish to understand taxation on the principle that if you ignore it, it might go away!

Chief among causes of misunderstanding was the new legislation which, according to 21 accountants, confused taxpayers. A further accountant made the point that a 'low' was reached after the introduction of new legislation but thereafter those affected came to understand it as well as other legislation. One accountant said that the legislation of the 1965-69 Finance Acts is more difficult than preceding legislation and probably impossible for the taxpayer to understand; another pointed out that the recent acts were as voluminous as anything which preceded them.

The income tax return was mentioned as a cause of confusion by 12 accountants. Five said that changes in the annual return form have confused the taxpayer. Three of these, and four others, a total of seven, said that in general the taxpayers' return of income form is less well-understood than formerly in spite of

'improvements' in it, possibly because it is more imposing. Three of these suggested that the volume of information required in the annual return intimidates the taxpayer – that he fears that he may complete it wrongly. One of these accountants held that the section on acquisitions and disposals was particularly difficult. Another accountant argued that the annual return is not easy for a man of average intelligence to fill in because of the complex nature of taxation. A further accountant felt that taxpayers were confused by a tax return for 1970/71 that related to 1969/70. This problem of taxation 'a year behind' is also mentioned by two practitioners about Schedule D, one of whom cited Case VIII (rents) as an example.

The most confusing aspect of the tax system has undoubtedly been capital gains tax. Twenty-one accountants mentioned it, 17 in general terms, four in relation to particular problems such as disposals not at arms length. Two accountants thought that capital gains tax will increasingly affect those of modest means (and so will presumably become less well understood by those who pay it). Clawback of family allowances was another favourite candidate for misunderstanding – mentioned by nine accountants; and eight accountants referred to the effect of frequent changes in personal allowances in militating against an understanding of the system. On company taxation the area of misunderstanding, mentioned by four accountants, was that of shortfall; two ventured the opinion that close company directors seldom understood the tax law which governs their companies.

Whilst these were the most frequently mentioned causes and consequences of misunderstanding, a wide range of other answers was given. Two accountants blamed the news media, holding that 'potted' articles on tax affairs tend to mislead, and the newspapers over-dramatise the difficulties. Another accountant held a contrary view of the value of newspaper and magazine articles on taxation and a further respondent argued that people were now better able to understand partly because of education. Three implicitly disagreed with this view: they held that the complexity of the tax system makes it necessary to explain to clients at great length; in the end they often take the explanation on trust without understanding! Two blamed the Inland Revenue for the lack of understanding: one believed that verbal explanations from the tax office are more likely to confuse than to clarify; and the other that the Inland Revenue was less prepared to help taxpayers than formerly.

One effect of the reduced understanding of the tax system is that more people are consulting accountants, according to three respondents, two of whom held that people who previously conducted their own affairs now use accountants because they cannot cope.

Failure to claim allowances

Accountants were asked in the interview:

Of those who come to this office for the first time, how often amongst Schedule E taxpayers do you think there is a failure to claim all the tax allowances, expenses and deductions applicable to the individual?

The answer was sought as a percentage of such clients.

Fourteen of the interviewees did not answer the question either because they did not have Schedule E taxpayers amongst their clients or because they did not feel able to make a realistic estimate.

Of the 46 who did answer, just under a quarter (24 per cent) held that all their new Schedule E clients had claimed all allowances due. The remaining three-quarters held that some proportion of their new Schedule E clients had failed to claim all allowances. More than half of the respondents estimated that over 20 per cent of such clients had failed to claim all allowances; and 14 accountants (30 per cent) believed that this might be true of over 70 per cent of their new Schedule E clients.

Whilst the estimates give some idea, from the experience of accountants, of the large numbers of Schedule E taxpayers who may not be claiming all their allowances, it would be misleading to treat them as typical of *all* Schedule E taxpayers; as one accountant pointed out, those who come to his office for the first time come *because* they think that there are allowances they have failed to claim or claim in full.

There was some difference of opinion about the value of an accountant to such taxpayers. On the one hand three accountants argued that the taxpayer who does not have a tax adviser may suffer from Revenue inaccuracies; and four held that they were often successful in making claims which had been refused to the individual. On the other hand, three held that they had met cases where the taxpayer had been more successful in claiming allowances than the accountant would have been; and two went so far as to say that some small taxpayers who do not employ accountants get lenient treatment from the Inland Revenue and might pay more tax if they consulted an accountant. Three others held that the average taxpayer erred to his own benefit in failing to declare small income receipts. Three accountants said that the average taxpayer does not miss many allowances, but one of these exempted expenses and deductions. One further accountant thought that taxpayers understand the principle of allowances but cannot predict their precise effect on net income.

The Inland Revenue came under fire from several accountants for a variety of reasons, e.g. one argued that the Inland Revenue should issue form 70C (for-

mal assessment to tax) for every taxpayer;⁷ another asserted that sometimes interest receivable is estimated by the Inland Revenue at £10 per annum irrespective of whether it is really less than this. One accountant defended the Inland Revenue saying it helps Schedule E taxpayers to claim all expenses.

The interviewees were asked to suggest the type of allowances and deductions missed; their replies are listed in Table 20. Life assurance relief, dependent relative relief and subscriptions to professional bodies and trade unions were the answers most frequently given.

Errors in tax paid

A group of further questions were put to the interviewees about the charges they would make to certain categories of new tax clients and their expectation about the correctness of the tax such clients had previously been charged. Thus the interviewer said:

You receive 100 new clients who have not consulted a tax adviser. They are all income tax payers with only one source of income under Schedule E. Some of them have been assessed to tax for the year under consideration, others have not, but they have all paid tax by deduction at source. You investigate their tax affairs for that year. On average, how much would you charge one of these clients for dealing with his tax affairs (a) if he had no expenses claim; (b) if he had an expenses claim?

Fifty-two accountants replied and their answers are summarised below:

	(a) Fees without an expenses claim	(b) Fees with an expenses claim
	£	£
Lowest fee	2.10	4.20
Highest fee	31.50	75.00
Mode	10.00	15.00
Median	10.00	15.65
Mean	11.47	18.89

Interviewees were then questioned about the percentage of these new clients they would expect to have paid the correct amount of tax to within various levels of true tax liability.

In the answers a marked contrast is apparent between accountants' expectations of new clients with and without expenses claims. About two-thirds (64 per cent) of the accountants felt that 90 per cent or more of their clients would have paid within plus/minus 5 per cent of true liability when there was no expenses claim. *With* an expenses claim no accountant

⁷ In his book *The Inland Revenue*, published in 1965, Sir Alexander Johnston indicated that of the 23 million then coming within the scope of the PAYE scheme, only four million (17 per cent) were actually assessed.

TABLE 20

List of allowances, reliefs and expenses not claimed by some taxpayers

Type of benefit	No. of accountants citing this benefit
Tax treatment of:	
Bank interest	6
Mortgage interest	5
Investment income repayment claims ¹	4
Superannuation payments	3
Payments under deeds of covenant	1
Wives who are separated from husbands	1
Voluntary maintenance payments	1
Allowances:	
Child allowances ²	7
Transfer to wife's income of husband's unexhausted allowances	1
Capital allowances	1
Reliefs:	
Life assurance relief ³	26
Dependent relative relief ⁴	25
Housekeeper relief	7
Derestriction of restricted £ths earned income relief ⁵	6
Age relief ⁶	5
Widow's additional relief in respect of children	4
Wife's earned income relief	3
Expenses:	
Subscriptions to professional bodies and trade unions	11
Equipment necessary for employment, e.g. special clothing and tools ⁷	4
Motor vehicle expenses	3
Part-time use of home for business purposes	2
10 per cent extra statutory wear and tear allowance in respect of furniture, fittings and equipment under schedule D, Case VIII	1

¹ Especially by old ladies (2).

² Especially where the child is adopted; where the child is an overseas resident; where the Revenue fail to increase the allowance when the child grows older; where the child is illegitimate; where the child is a major and in full-time education.

³ Especially wife's life assurance relief; small life assurance relief.

⁴ Especially relatives abroad.

⁵ Where earned income relief is restricted by an annual payment such as mortgage interest but where such annual payment is either partly or wholly covered by investment income.

⁶ Especially women of advanced years who fail to declare their age.

⁷ For example, lecturers, demonstrators, manual workers, certain school teachers.

thought that more than 80 per cent of his clients would be in this category and 40 per cent of accountants thought that none of their clients would have paid within plus/minus 5 per cent. Accountants expected virtually all clients (99.7 per cent with an unweighted average) without an expenses claim to have paid within plus/minus 10 per cent of true liability; but only about half of those with an expenses claim.

Interviewees were further asked:

You receive another 100 clients all of whom have several sources of income, of which the principal source gives rise to a Schedule D Case I or II liability. They have all prepared their own accounts and submitted tax returns for the year under consideration and have paid the tax demanded without consulting a professional adviser. How much would you charge one of these clients for dealing with his tax affairs?

A summary of the answers is as follows:

	£
Lowest fee	7.40
Highest fee	131.75
Median	40.00
Mode	30.00
Mean	45.35

As before, interviewees were asked about the percentage of these taxpayers they would have expected to have paid the correct amount of tax to within various levels of true tax liability. Fifty accountants answered the question. Just over half (52 per cent) expected none of their clients to have paid within plus/minus 1 per cent of true liability; a third (32 per cent) expected none of their clients to have paid within plus/minus 5 per cent of true liability. Over half the accountants (56 per cent) thought that at least one-fifth of their clients would have an error in payment of greater than plus/minus 20 per cent of true liability and 8 per cent of accountants thought that *none* of their clients would be within plus/minus 20 per cent of true liability.

7: Avoidance

An area where the taxpayer may particularly feel the need for advice, and the accountant, as we have seen, may find it particularly profitable to provide it, is that of tax avoidance – or, as many accountants euphemistically prefer to call it, ‘tax planning’ or ‘tax mitigation’. Tax avoidance is the wholly legal re-arrangement of one’s affairs to reduce one’s tax bill. Accountants interviewed were asked:

Do you believe that the extent of legal avoidance has increased in recent years?

They were further invited to give examples and explanations; to indicate their own and their clients’ attitude to avoidance; and to give examples of practical disadvantages which might result from the application of tax avoidance schemes.

Of the 59 accountants who answered the question, fractionally over half, 30, thought that there had been an increase in avoidance. Several added qualifications: two thought that it had increased ‘slightly’ in their own office; two added that whilst avoidance had increased, it was becoming more difficult; and a third made the same point in a different way by amplifying

that, whilst the many loopholes had been closed, remaining were being used more heavily. One argued that legal avoidance had increased, but it was the same people trying to protect their wealth.

Twenty-six replied ‘No’, of whom 19 held that this was because many loopholes had been stopped; one qualified the ‘No’ by excepting capital gains tax on property and unquoted shares. Three accountants, whilst willing to comment, did not feel able to give a positive or negative answer to the question. Eight of those who said ‘Yes’ and three saying ‘No’ held that the public has become more tax avoidance conscious.

To sum up: accountants were about equally divided on whether or not avoidance had increased in recent years. But there is little doubt that a majority considered that the taxpayer was more willing to seek avoidance methods. If avoidance has not increased, it is because loopholes have been closed.

Reasons for avoidance

Fourteen accountants attributed the search for avoidance schemes to the high level of tax rates. Three of these and one other commented that the extent of tax coverage brought more people into the net who then wished to escape. One of the 14 mentioned specifically the effect of estate duty in breaking up estates if avoidance schemes were not found; another reason adduced for the search for avoidance was currency control (1); a further suggestion was the difficulty of building up reserves in the close company and in partnerships (1).

Evasion

No questions were asked about evasion, i.e. the reduction of one’s tax bill by illegal methods, but a number of accountants volunteered information about it. Nine held that some clients could not distinguish between avoidance and evasion and one of those said that some clients propose methods of evasion. Four other accountants maintained that evasion has increased, one elaborating that it was mostly in the form of small Schedule D earnings. Two of the nine accountants and one other referred to evasion by the client appropriating extra cash takings and three others suspected clients of evasion (one gave the example of benefits in kind), though this was often impossible to pinpoint. Another accountant held that evasion was highest amongst the self-employed; it was argued that this often resulted in ‘fatuous’ back duty cases (1); and that, because the Inland Revenue realised that the self-employed had most scope for evasion, they were treated with suspicion and thoroughly investigated (1). As with avoidance, increased evasion was blamed on high tax rates (2). In the view of seven respondents, clients are restrained from the worst excesses of evasion by their accountants.

Examples of avoidance

Estate duty planning tops the bill with eight mentions under this question, though a number of other accountants also referred to this aspect of estate duty in reply to other questions (see below). Attention to cessations and commencements was mentioned by accountants and six referred to the adoption of self-employed status. Three accountants mentioned devices for receiving income from outside the UK – tax havens, trusts held abroad – and a fourth mentioned living abroad. Cash management and provisions to avoid shortfall were mentioned by four accountants and pension schemes for the self-employed by three. There were six mentions of capital gains tax, three of which were elaborated: the top rate of 30 per cent was a valuable avoidance loophole; dividing up an estate of land into parcels avoided capital gains tax part-disposal rules; and capital gains tax loss-making to cover profits at the year end. Company formation was mentioned by three accountants, once in relation to entertainers' incomes. A wide variety of individual examples were given by other accountants.

Clients' attitude to avoidance

Forty-two accountants said that clients encouraged their accountants to discover methods of tax minimisation or that clients were very much in favour of tax-saving or both. But there were some individual qualifying comments: that clients will adopt avoidance measures when advised but seldom instigate them; that clients will not adopt avoidance measures where tax and commercial considerations conflict; and that accountants sometimes avoid tax for their clients without their knowing.

Nonetheless, there were barriers to the adoption of avoidance measures by clients. Five mentioned that some clients (one specifically referred to older clients) believed avoidance to be immoral. Twelve accountants mentioned the dislike of many clients for complex schemes: it was suggested that the average business client just wanted a few expenses such as those for a motor vehicle; and that clients seldom implement avoidance schemes they do not understand. Fourteen accountants mentioned the unwillingness of clients to divest themselves of assets or lose power over money – hence they did not avoid certain types of tax, e.g. estate duty, as much as they could. Procrastination by clients was mentioned by three accountants – two about estate duty and one capital gains tax – until it was too late or less beneficial to adopt an avoidance scheme. Finally, two accountants mentioned the concern of some companies about their public image – which prevented them from adopting complex avoidance measures. Whilst one accountant said that increasing sums were being spent on tax planning, five

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accountants referred to 'most' or 'many' clients who were not prepared to pay large amounts for tax planning; they did not appreciate the work done, said one of these, and the other four referred to the unpredictability of the ultimate tax saving. The fact that tax saving was not always precisely predictable was one factor mentioned to explain the characteristic referred to by three accountants: that clients sometimes ask for avoidance schemes to be drawn up but seldom complete them; the other reason mentioned was the administrative complications of re-arranging their affairs.

This antipathy to avoidance schemes on grounds of unpredictability, complexity and unwillingness to part with assets, is partly explained by examples given of avoidance schemes which turned out to have disadvantages or failed to achieve the expected benefit. About a dozen accountants referred to changes in tax law affecting companies and partnerships. Close company legislation made partnerships more attractive; then the lifting of the limits on directors' remuneration affected the balance of advantage again. Five accountants mentioned splitting businesses as a way of circumventing the limit on directors' remuneration; then the change of law removed the advantage and left the taxpayer with a more clumsy organisation as well as the bill for the costs of making the change. Several examples were given of tax avoidance which went awry because of a breakdown in family relationships; e.g. a husband and wife partnership – later followed by divorce; or the farmer who takes his son as tenant to get a tenanted value for estate duty – and then father and son fall out. Three accountants mentioned the 'ultimate' avoidance device of a foreign domicile – but some who adopt it feel miserable despite the tax saving: as one put it, the accountant should always see that those who go abroad can be repatriated without unexpected difficulty.

Accountants' attitude to avoidance

What of the accountants' own attitude to avoidance? Six of the interviewees had no experience of elaborate schemes or felt they were beyond the scope of their particular kind of practice and did not comment. The overwhelming attitude, expressed by 46 accountants, was to approve tax avoidance schemes to the full extent of the law. Two added the justification that the Inland Revenue applied the principle in reverse and two more indicated that they especially approved avoidance where it could be used to mitigate high tax rates.

But a number added reservations: as many as nine disapproved or had reservations about what they variously called 'complex', 'artificial', or 'extreme' forms of avoidance. In three instances this disapproval

was explained by reference to the anti-avoidance action which such schemes provoked – which complicated the tax law and might prejudice genuine cases. Another accountant held reservations on (legal) death bed expedients; whilst a further exception was where the taxpayer in taking avoiding action, absolved himself of other responsibilities, e.g. the employer who encourages sub-contracting where the people involved are not sensible enough to provide for future adversities.

Three accountants indicated that they did not seek avoidance work, but gave avoidance advice if asked for it; one added that some of his clients would leave him if he did not do avoidance work with them. Whilst one accountant held that avoidance work was always interesting and usually profitable, three referred to the work as 'unproductive' or a waste of talent and time. Two commented on the effect of tax avoidance in reducing tax yield and pushing up tax rates. One accountant made the significant comment that 'most of the original thought in this office goes into tax avoidance'.

Tax saving and the accountant's fee

One of the interview questions sought to identify the taxes or parts of the tax system which offered the most and the least scope for tax saving in relation to the cost as measured by the accountant's fee. The interviewer explained:

The client's tax saving as a result of receiving tax advice including tax planning could be expressed as a multiple of the tax bill which he has to pay to his accountant, e.g. bill rendered by you for tax advice and services £50; tax saving £500; multiple 10. The higher the multiple the more profitable it is for the client to employ an accountant. (a) Which taxes (or parts of the tax system) would from your experience exhibit a high multiple? (b) Which would exhibit a low multiple?

Three respondents had no comments to make. Table 21 summarises the replies of the remainder by listing those parts of the tax system mentioned by three accountants or more. Estate duty emerges as predominantly the tax with the highest multiple of tax saving to accountant's fee, with Schedule D Case I and II cessations and commencements next. Personal tax returns, personal capital gains tax on quoted securities and capital gains tax generally, are the most frequently cited examples of parts of the tax system with low multiples.

8. Tax reform – some general considerations

'Tax reform' is an expression which covers a wide variety of changes: it may refer to new taxes for old;

to changes in the balance of taxation such as more direct and less indirect or vice versa; to detailed changes in the form and content of taxes; to changes

TABLE 21

Tax saving as a multiple of the cost of tax services

Tax, aspect of tax or type of tax work	No. of accountants	
	Low multiple	High multiple
Capital gains tax		
Generally	7	—
Personal—quoted shares	8	—
Unquoted securities	—	4
Land	—	4
Corporate	—	3
Income tax		
Personal tax returns	20	—
Schedule D Case I and II, cessations and commencements	—	9
Schedule E expenses	1	6
Surtax		
Generally	1	4
Estate duty		
Generally	—	22
Big estates	—	4
Corporation tax		
Generally	1	6
Close company	1	5
Cessations and liquidations	—	3
Tax planning in general	—	5

in the process and method of administration. As we indicated at the beginning of this paper, the motive behind this research into the hidden costs of taxation was to promote tax reforms, especially reforms which might reduce compliance cost to the taxpayer without having off-setting adverse consequences. But besides data bearing directly and obviously on reform to reduce compliance costs, the research generated information on three related issues of reform – simplicity in the wording of the tax statutes; equity or (to use the economist's more precise term) 'horizontal equity' in the content of the tax system; and efficiency of administration by the Inland Revenue.

Improvement in the drafting of Finance Acts

Simplifying the tax system is a frequently declared objective of reformers; simplification may relate to the content of taxation, to its administration and to its presentation. We are here concerned only with presentation: interviewees were asked:

Do you believe that the wording of the Finance Acts could be clarified and improved, without any sacrifice of precision as to the exact nature of the law?

Of the sixty accountants interviewed, 36 said 'Yes', of whom six said they felt strongly and two not very strongly. Twenty said 'No' and four were not prepared to give a direct answer to the question but were willing to comment. Those who did reply 'Yes' or 'No' were often hesitant to give a categorical answer. This

hesitancy is shown by individual comments such as: 'This is a difficult question to answer'; 'This is a very specialist field and I can only give a personal and possibly ill-informed opinion'; 'Yes, but you would need a brilliant draftsman'.

Two accountants specifically commended Parliamentary draftsmen: one held that they were much brighter than many people realise and the other that Finance Acts are well drafted.

Several areas of particular complexity in the Finance Acts were indicated. Twelve accountants thought that much of the wording is fairly easy to understand but there are areas of great confusion, especially where a particular situation is not accurately envisaged. Another six considered that the interpretation of certain words in Finance Acts demands a legal, rather than an accounting, training; as one said, there is a lack of definition of words, e.g. 'relief', 'disposal', 'asset'. One accountant held that the absence of punctuation harms comprehension of tax statutes whilst another complained of some incredible wording: a 'period of account' is not an 'accounting period'. Two others held that the use of schedules to act hinders understanding. Of those who said 'Yes', four recorded cross-references as particularly time wasting and this was also the stated opinion of one who said 'No'.

The complexity has been accentuated by recent legislation, especially the 1965 Finance Act; eight accountants recorded this view in one form or another and amplifications included: that insufficient thought went into the Finance Act 1965 (2); that recent legislation was more complex or unclear than legislation before 1965 (4); and that the 1965 innovations were very strict and it might have been better to legislate more generally and then gradually eliminate the loopholes (1).

Causes of complexity mentioned were: the complexity of business affairs (3); the need to draft the law to deal with cases of complex avoidance (2) (for which the respondents attributed blame to accountants themselves); and the fact that tax law now casts a wider net (1). Two specific consequences of this complexity were mentioned by individual accountants: an unpredictability, which makes it difficult to give clients good advice on tax minimisation; and the need for accountants to specialise in particular taxes.

The consolidation of income tax by the act of 1970 had helped according to seven accountants and one specifically referred to its effect in diminishing the cross-reference problem; but three maintained that it had not yet had any noticeable effect and another held that the process of building a series of inter-relating acts had begun again with certain sections of the

Finance Act 1970. Three accountants mentioned the need to consolidate estate duty and three others the same need for capital gains tax.

Those who replied 'No' to the original question, or who were doubtful, saw problems in an attempted simplification of the statutes: it usually meant further complications in the short term (1); a sacrifice of precision (1); an increased job for the Inland Revenue in interpreting the law (1). Simplifying the wording, two accountants believed, would mean that the clever would be able to find loopholes.

Two accountants made suggestions for reducing the complexity of tax legislation and its application. One held that it would help if at the head of each section a general description of the text (which need not have the force of law) were given. Another suggested that Inland Revenue extra-statutory concessions should be embodied in legislation.

Horizontal equity

'Horizontal' equity is the principle that two people of similar taxable capacity should be taxed the same (as distinct from 'vertical' equity, which is the much more subjective consideration of how differently people of different taxable capacity should be taxed). Interviewees were asked:

Can you indicate any groups of the taxpaying population who are treated by the tax code dissimilarly but who in reality are very similarly placed and where no substantial inequity to taxpayers or loss to the Revenue would result from the abolition of the distinction now made by the tax code?

Six accountants said they could not give examples and one did not reply; thus 53 accountants commented. Comments divide into two broad categories: most are fairly strict answers to the question, instancing cases of people similarly placed but treated differently; but some accountants made more general comments on what they saw as lack of fairness in the tax system.

The employed and the self-employed

Pride of place in answers went to the inequity which accountants saw in the expenses rule for Schedule D and Schedule E. Thirty-six (68 per cent) of accountants mentioned the favourable treatment of Schedule D taxpayers and a further one, with the same point in mind, referred generally to the different treatment of the employed and self-employed. Other advantages seen for the self-employed were that, because Schedule D tax payments are later than Schedule E payments, Schedule D payers have the use of this money in the meantime (2). A further accountant pointed to the advantage of any proprietor of a business with consumables, who can take benefits in

kind which are usually more valuable than the amounts assessed on him.

On the other hand, three inequities to the detriment of the self-employed were mentioned by individual accountants: a taxpayer (Schedule D, Case I and II) who pays on an estimated assessment loses any further right to appeal; losses under Case V or Case VI of Schedule D cannot be offset against gains under Case I or II of Schedule D, but only carried forward against the same class of income; and pension premium payments for the self-employed contained an inequity – if you underpay the premium it is not possible to carry forward, but if you overpay you can.

Moreover, a particular class of self-employed, the sub-contractor, was getting a raw deal, according to four accountants who held that the Inland Revenue had been instructed to lean on sub-contractors and look unsympathetically on claims for expenses: motor vehicle expenses in connection with the place of business were mentioned; and one accountant argued that inspectors were trying to cut the subsistence allowance of self-employed sub-contractors in many cases to a figure less than the 15p per day allowed to Schedule E payers by means of tax-free luncheon vouchers.

Inconsistency in administration was seen as a cause of inequity: two accountants said that inspectors of taxes were not always consistent in applying the informal rules which determine whether a person is taxed under Schedule D or E; and another argued that inspectors seem to have no standards for home consumption and private use of car – that, on the same facts, treatment differs between districts, and negotiation of small allowances wastes more time than the tax involved is worth.

Treatment of earned and unearned income

Nine accountants were concerned in one way or another with what they saw as the unfair treatment resulting from the distinction between earned and unearned income. Six specifically mentioned retired people on unearned income who, not receiving earned income relief, are taxed 'too highly'; three of these sharpened up their point by comparing the retired on unearned income with those receiving occupational pensions benefiting from earned income relief. Two other accountants referred to the taxation of investment income at surtax rates where the total income of the individual is small.

A rather different point was made by a tenth accountant, of the inequity to retired people who have a repayment claim on investment income and who have to wait to get their money back.

One accountant pointed to the discrepancy that property income can be earned or unearned depending

on the arrangements and a further respondent illustrated this generalised statement by reference to holiday letting rental income – which could go under Schedule D, Case I, VI or VIII; under Case I it would possibly qualify as earned and would be taxed on a preceding year basis, under Case VIII it would be taxed as unearned and on an actual basis.

Inequities in capital gains tax

Capital gains tax ranks first among the taxes for the largest number of different inequities mentioned, although most of them were mentioned only once. One respondent summed it up, in fact, by volunteering the information that 'inequities on capital gains tax are greater than elsewhere'. Seven accountants mentioned the different treatment of individuals and companies for capital gains tax. One pointed out that an individual with property income and capital gains was subject to Case VIII and capital gains tax; the same receipts through a company would be subject to capital gains tax, corporation tax and Schedule F. A second accountant referred particularly to an investment company, whilst four felt it inequitable that the sale of assets held within a company can attract capital gains tax at the higher rate applicable to companies and then the disposal of shares in the company attracted capital gains tax again.

Other alleged inequities in capital gains tax mentioned by individual accountants were: the differing treatment of long- and short-term gains; the fact that the low tax liability case is likely to carry as high a compliance cost as the high liability case; the comparison of the man with a home to retire to and the one without (who will have to sell investments and pay gains tax on the proceeds); inequities in the retirement rule, for example for someone who retires early because of ill-health (although it was added that a helpful tax inspector could remedy this); the liquidity problem posed by capital gains tax on the disposal of shares in a private company by gift.

The income 'unit'

Nine accountants mentioned the aggregation of the income of husband and wife as inequitable either because of its effect on surtax payments or/and in restricting the earned income relief available. Two accountants considered it inequitable to aggregate the child's income with that of the parents.

The form of the business enterprise

Four accountants felt that there was inequity in the relative treatment of close companies and partnerships; two elaborated this by claiming that by judicious arrangement the close company can be run to bear only corporation tax – it is easier to retain

funds for expansion in a close company than a partnership where both income tax and surtax is paid; and, as one of these respondents pointed out, as the professions cannot readily adopt the company form, they suffer.

But advantages do not lie wholly with the company form. As four accountants mentioned, sole traders who become close company directors incur more 'hidden' costs; they need to prepare accounts and take action to avoid shortfall. Also not all accountants took a sanguine view of the ease with which shortfall might be avoided: three contrasted the treatment of close and unclosed companies and argued that the shortfall provisions, when strictly applied, make it difficult for the closed company to expand from retained earnings.

Two respondents remarked on the inequity of valuation of a private company for estate duty purposes.

Some miscellaneous points

Four accountants were concerned at the disallowance of entertainment expenses when they were for the good of the business.

Five respondents felt that the interest provisions of the 1969 Finance Act were inequitable.

PRIEDs also came in for criticism. Three of the comments were concerned with the starting level which was held to be too low. One concerned the inequity by which non-trading organisations were not subject to PRIEDs.

Additionally a number of individual comments were made, most of them subjective judgments about the fairness of particular features of the system rather than breaches in the principle of horizontal equity. But two accountants pointed out the inequity that may arise because sick pay is tax free: thus a man, whose wife works, is ill before retirement and receives tax free sick pay; he retires from ill-health and his pension is taxable. Another accountant alleged that tax inspectors had been instructed to examine claims to allowances by immigrants more strictly than other people's claims.

One accountant held that a lot of allegations were made about the unfairness of the tax system which were not justified. A further respondent pointed out that remedying these horizontal inequities would be costly in revenue.

Inland Revenue efficiency

Interviewees were asked the following question:

Have you noticed any change in the efficiency and speed with which the Inland Revenue attends to the tax affairs of your clients, e.g. in attending to correspondence and assessments? Give examples.

Response

All sixty accountants commented on this question, but not all were prepared to give categorical answers. Forty-one accountants did say there had been a change, six said there had not. There is some element of ambiguity in the way the question refers to both 'speed' and 'efficiency'. Speed might well be held to be a necessary component of efficiency, although one can have speed without efficiency. Some comments were sufficiently wide to cover both speed and efficiency (e.g. 'they are good all round') but, distinguishing these two factors where possible, let us consider first the speed with which the Inland Revenue dealt with the affairs of taxpayers.

Speed of dealing with affairs

Some accountants were prepared to generalise over the whole field, others commented only on changes in particular aspects of tax work. Twenty-seven accountants maintained that the Inland Revenue were 'slower' or 'generally slower', of whom four considered them 'very much slower'. Three thought them faster, one of whom thought them 'very much faster'.

One accountant thought that two or three years ago they were slower in general, but were now speeding up; and two others made much the same point, referring to both speed and efficiency when they alleged that a bad start was made after 1965, but more recently things had improved. Three respondents argued that on some things the Revenue were faster and on others slower.

Examples of changes in the speed of work related sometimes to the nature of the work, the kind of problem, the location, particular taxes or particular categories of Inland Revenue staff.

Nature of the work: general examples of slowness frequently mentioned were correspondence – where delay in answering letters was mentioned by six accountants of whom one added 'especially when the query originated with the tax adviser'; the transfer of files between offices (6); the work of the share valuation division – very slow according to nine accountants (one mentioned a twelve-month wait) attributed by most respondents to overwork; and repayment claims, which 14 accountants said were sometimes slow – one mentioning especially PAYE and personal cases (e.g. a widow with investment income) and another, itinerant workers.

On the other hand, listing of hearings (after appeal) was recorded as faster by four accountants.

Complex problems: seven accountants held that difficult tax problems were dealt with more slowly, one of whom hazarded that there might be a tendency for

such problems to be referred to head office. A further accountant indicated the same impression – of rulings coming from head office in an attempt to secure uniformity of treatment.

A further five accountants indicated that where a PAYE taxpayer had a small complication, e.g. a capital gain or some Schedule D income, the Inland Revenue were always slow in dealing with it.

Location: non-local districts were often slow in replying according to six accountants. Delays occur where the taxpayer comes from another district or has tax affairs which are done by two offices (1). And one accountant maintained that whereas Somerset House used to answer queries on the phone, now you write and wait.

Particular taxes or aspects of administering a particular tax: we have already noted that nine accountants recorded that the share valuation division was slow which would affect *capital gains tax*. Seven other accountants held that, where capital gains tax involved the district valuer, 'all' (5) or 'some' (2) cases were a lot slower. More generally, five accountants held that capital gains tax work was slower, but one held that, whilst the work was very much in arrears, the Inland Revenue were catching up.

As many as 24 accountants recorded that PAYE was slower 14 of whom specifically referred to London Provincial and other decentralised PAYE districts. Specific comments were that requested PAYE assessments were done slowly (3); that transfer of files to PAYE centres was very slow (2); that code numbers were slow to be changed (1).

Ten accountants recorded dealings with *surtax* as slower, one of them specifically referring to *surtax* repayments.

One area in which tax work had become faster, according to the majority of those who commented on this topic was *assessments*; five noted that they were sent out earlier, although another accountant stated that Schedule D assessments were slower coming out. One of the five and two others also maintained that the Revenue was collecting tax earlier from business clients.

Senior staff: one accountant recorded that senior staff are busier and therefore slower.

General comments: the changes in the speed of work of the Inland Revenue were not all seen as disadvantageous. Three accountants indicated that Inland Revenue slowness was often a help to the accountant or the client. One specific illustration was delay in making assessments on new businesses – which helped their liquidity position.

Also, obviously not all accountants were impressed

by the areas of work in which the Inland Revenue were speeding up: four gratuitously commented that estimated assessments were often a waste of time.

Efficiency (other than speed)

Thirteen accountants offered the generalisation that the Inland Revenue was less efficient than formerly – that all sorts of errors now occur. Two held that there was no change in Inland Revenue accuracy – one of whom added that it was always necessary to check. Three accountants paid compliments to the Inland Revenue's efficiency: one described them as 'good all round'; another held that the Inland Revenue in his town (Hull) was 'more efficient than ever before'; and a third added that the Inland Revenue worked well with the exception of capital gains taxes. There were also compliments on particular aspects of tax work: one accountant held that complicated cases were usually done accurately and another that the Revenue was taking more care over capital gains tax assessments than it did at first. An adverse comment on the Revenue's efficiency, but not wholly to the disadvantage of the accountant, was that the degree of penetration of Inland Revenue inquiries had dropped letting the accountant 'get away with it'. This was rather contrary to the view of another accountant who held that the Inland Revenue were more sceptical and were asking a lot of unnecessary questions in back duty cases.

Particular aspects of inefficiency

Surtax: the ten accountants (above) who held that *surtax* administration had become slower also held that it was less accurate than formerly. Two of them looked back to a time 'when the *surtax* office was always correct'. One made the point that the practice of sending *surtax* assessments for several years together was not only unpopular with clients but also an indication of growing inefficiency.

PAYE: just as more accountants recorded slowing down and delays in PAYE work than in any other aspect of the system, so more recorded inaccuracies here than anywhere else. Twelve accountants recorded an increasing number of inaccuracies in PAYE work; specific criticisms were errors in coding (2); an increase in the number of useless queries (2); a lack of co-operation with agents acting for Schedule B taxpayers (1). Some general comments on PAYE were that the staff had no discretion to act (2); that the system could not cope with itinerant workers (1); that the new offices were remote and had destroyed liaison with the local office (3) and that it did not seem possible for professional advisers to use the free phone service of the decentralised PAYE offices.

Assessments: four accountants felt that there had been

a decline in the efficiency of final assessments, one referring specifically to the increased frequency of arithmetical errors.

Variations in efficiency: a common theme, mentioned by nine accountants, was that of variation in efficiency between tax districts; one of these also referred to variation between inspectors. Two accountants felt that there were seasonal variations in efficiency, especially in PAYE work. A slightly different point, but relevant to the efficiency of the whole system, was that, according to three accountants, different interpretations of the law came from different tax offices; two added that this applied especially where the law was loosely written, e.g. shortfall. This point was made by a number of accountants when discussing shortfall (above).

Liaison between offices: as many as 14 accountants alleged that liaison between tax collectors and inspectors was poor (5); or had deteriorated (9). Two held that it was so bad that they wrote to both at the same time. A further respondent complained that sometimes the collector tried to collect when the inspector had agreed to negotiate. Only one accountant said he had found liaison between inspector and collector good. Three of those who complained of bad liaison understandably made the point that it could reflect badly on the accountant in his client's eyes where, after a settlement between accountant and inspector, the collector tried to collect a different sum. Liaison in other ways also left something to be desired. Five accountants complained of poor liaison between inspectors and two more of bad liaison between the surtax office and the inspector. One accountant held that problems arose when the inspector had to liaise with someone else in the Inland Revenue. Two other individual examples on lack of liaison were the demanding of tax on one assessment when a repayment was due on another assessment; and the sending out of final assessments even when an agreement had been reached with the inspector for a major modification or for holding back.

Quality and helpfulness of Inland Revenue staff

Eight accountants volunteered the view that the tax inspectorate was of high quality. Eleven commented on the helpfulness of the inspectorate, general or local, whilst four others spoke of the helpfulness of the 'local tax office'. Helpfulness could be a mutually beneficial two-way traffic; five accountants suggested that helpful accountants and those with a good reputation with the local tax office get prompt attention; and three others indicated their view that close co-operation with the Inland Revenue can be a great advantage in difficult cases, saving time and money; one of these added that the job can be simplified by

dealing with a reasonable inspector acting with personal discretion.

Not all the comments on the inspectorate were as favourable, but the adverse comments were in a minority. Five accountants commented that inspectors were seldom commercially minded, three restricting their criticism to the younger ones. Three accountants accused inspectors of spending a lot of time chasing trivial amounts of revenue, e.g. deposit account interest. A small number of comments suggested some deterioration, or the danger of it, in the relationship between the inspectorate and the accountancy profession. Two held that the failure of 'less experienced' inspectors to be reasonable threatened to bring about deterioration; another accountant alleged that an inspector sometimes adopts a bullying attitude, and elaborated that this occurred particularly as a result of capital gains tax, which had altered the power relationships between the inspectorate and accountants. Another accountant also referred to the way the power of the inspector had been increased by both the tightening of anti-avoidance provisions and the need to declare assets for capital gains tax purposes. A similar kind of comment from another accountant referred to the new responsibilities put on the inspector by the necessity to deal with shortfall (where, before 1965, the analogous problem of a surtax distribution was dealt with by the surtax office).

If accountants generally think highly of the inspectorate, the same cannot be said for their views on the quality of lower level staff in the Inland Revenue. Without exception the comments were adverse. Two accountants generalised that all non-inspector work in the Inland Revenue had deteriorated. Fourteen blamed inferior staff in PAYE for the inefficiencies in this branch of the service, whilst 11 thought that errors in Schedule D Case I and II assessments were probably due to the use of low level or inferior staff. One accountant blamed the decline in the efficiency of tax collection not only on the lack of liaison with the inspector but also on low grade staff.

A more charitable interpretation of Inland Revenue failings was provided by the accountant who referred to lack of continuity because of staff changes.

Comment on Inland Revenue staffing and efficiency

The accountant acting on behalf of his client the taxpayer, and the Inland Revenue officers, concerned with raising revenue for the Exchequer, are inevitably to an extent set in opposition to each other; it is natural in this situation to find accountants quick to criticise the Revenue, and it is likely that Revenue officers would equally find much to condemn in the behaviour and efficiency of accountants. It is, then,

encouraging that the overwhelming number of comments on the tax inspectorate were favourable. But this very fact adds weight to the criticisms voiced such as the delays in dealing with the taxpayers' affairs, the lack of liaison between inspectors and collectors and the poor quality of much non-inspectorate work. The picture thus presented confirms and elaborates the views expressed in the Report of the Estimates Committee on the Inland Revenue Department,⁸ which merit quotation at some length.

23. One of the most intractable problems facing the Inland Revenue Department at present is the shortage of fully trained Inspectors of Taxes. It is these Inspectors who provide the leaders of the Chief Inspector's Branch and who handle the most complicated tax assessments. It is clear that a shortage at this level must have a marked effect on the efficiency of the Branch.

24. In recent years, especially since 1965, the volume and complexity of the work done by fully trained Inspectors have greatly increased. At the same time there has been a failure to produce, either by direct recruitment of graduates or promotion within the Branch, enough such Inspectors to keep up their numbers. Indeed, according to the Association of Inspectors of Taxes the number actually dropped between 1961 and 1969. The result has been that they are no longer able to do all the work that ought to be done at their level...

The consequences of this situation were set out in the conclusions of the Committee.

73. In your Committee's opinion there is no doubt that at present the Inland Revenue Department is understaffed and overworked. Serious as this situation admittedly is for the Department itself it is even more serious for the public as a whole.

9. Tax reform – particular taxes

No part of the survey contained questions specifically inviting proposals for tax reforms. Some suggestions for reform of individual taxes are, however, sprinkled throughout the interview answers; and the final interview question, which was an open invitation to comment on specific taxes and aspects of tax administration in the light of the purposes of the survey, provided the occasion for most of the reform proposals. Because of the context in which these suggestions were made, it was unlikely that any sweeping changes would be proposed by respondents; the most radical was the occasional suggestion to abolish a particular tax (e.g. estate duty, because it yields so little revenue and occupies so much skilled manpower).

Reform proposals therefore mainly take the form of detailed modifications to the existing taxes or methods of tax administration. This, indeed, is the kind of reform that the accountant, by training and experience, is best equipped to make.

In considering the reform proposals it is important to remember the timing of the survey. The questionnaire and the interviews preceded the 1971 budget, which introduced a wide-ranging programme of tax reform. Consequently, many of the respondent's suggestions have been overtaken by events. But it is of considerable interest to examine how far the accountants' recommendations for reform match up with the Chancellor's proposals. The supplementary questionnaire was the one part of the survey to follow the 1971 budget, and the opportunity was taken to test out the significance of the Chancellor's new capital gains tax provisions – all of which directly related to compliance costs. Thus the survey has rather more to tell us on the reform of capital gains tax than on any other tax.

Capital gains tax

Capital gains tax emerges from the survey as pre-eminently the tax with high compliance costs. Almost every accountant cited it as a tax costly to administer because of its complications. It has the highest rating for compliance cost to tax liability ratio, even without allowing for the additional costs of professional valuation sometimes required. So high is compliance cost to liability that many accountants feel unable to charge the scale fee; and capital gains tax is therefore the least profitable tax for accountants to administer – some arguing that they do so only at an absolute loss.

Further, it is the tax most frequently regarded as confusing to the taxpayer and most mentioned for its 'horizontal' inequities. With such unenviable distinction, here, above all, was a tax crying out for reform, especially for simplification. As one accountant expressed it, with some pardonable exaggeration, 'unless capital gains tax is simplified it will have to be abandoned'. The Chancellor sought to meet this need in three ways:

1. *Abolition of the income tax charge on short-term gains (Case VII) and its replacement by the long-term capital gains tax.*

This not only brought some simplification, it met the complaint voiced by three accountants that the distinction between short-term and long-term gains created inequities.

2. *The introduction of a new form of exemption from gains tax where the total proceeds of all disposals made in the year did not exceed £500. This replaced the exemption for gains of £50 or less (after 1971).*

This change effected a reform felt to be necessary by the largest number of accountants to comment on

⁸ Fifth Report from the Estimates Committee, Session 1968–69, Inland Revenue Department, HMSO, 1969.

capital gains tax in the final open-ended question. Many of them argued that under the £50 exemption limit often the same amount of work had to be done to prove the exemption as would have been required had there been a liability. Twelve accountants recommended a rise in the £50 limit; five maintained that it would be better to exempt the proceeds up to a specified figure in any one year, although one of them recognised that such an exemption would open the way to avoidance by regular part disposals.

In the supplementary questionnaire we sought to test out these views on the high compliance cost associated with the £50 exemption and also to obtain some idea of the effect of the new exemption. Respondents were asked how many cases they had dealt with in the past 12 months where capital gains tax liability had been less than £50. The 17 who replied reported 460 cases, an average of 27 per firm. They were further asked about the costs incurred in these cases; the results, set out in Table 22, are a clear vindication both of the accountants and the Chancellor. In nearly 80 per cent of the cases it had been necessary to charge the same fee as would have been charged had there been no £50 exemption.

TABLE 22
Effect of £50 capital gains tax exemption on compliance costs

<i>Number of cases where the £50 capital gains tax exemption made it:</i>	<i>All firms</i>	<i>Per cent of total</i>
unnecessary to incur any costs on behalf of client	10	2.2
possible to charge much smaller fee than would have been charged without exemption	40	8.7
possible to charge smaller fee than without exemption	52	11.3
necessary to charge same fee as would have been charged had there been no £50 exemption	358	77.8
Total	460	100.0

Respondents to the supplementary questionnaire were also asked how many cases they had dealt with in the previous 12 months where the total proceeds of all disposals had been under £500; the 19 accountants who replied reported an aggregate of 637 cases, an average of 34 per firm. This compares with the 27 cases per firm of gains under £50. The nature of an exemption itself affects the number of cases coming within it. The new form of exemption will push up the numbers of disposals with proceeds under £500 and is thus likely to prove quite significantly more 'liberal' than the previous exemption.

3. Abolition of the charge to capital gains tax on death.

This change, although not specifically recommended

by more than one or two interviewees, undoubtedly effected a further simplification. It also bears on a feature of capital gains tax mentioned by three accountants: that the tax slows down and modifies asset disposal – the so-called 'lock in' effect. To try to obtain some idea of the lock-in effect, respondents to the supplementary questionnaire were asked:

In your experience, have personal clients not sold assets which they would otherwise have sold, e.g. refrained from changing their investment portfolios, as a result of capital gains tax?

Those who answered 'Yes' were then asked to say how often this had occurred, expressing their answer as an approximate percentage of their personal capital gains tax clients.

Seventeen accountants provided usable answers. Of these, 13 (77 per cent) replied that *some* of their clients had refrained from selling assets because of capital gains tax. The percentage of such clients is given in Table 23. Eight firms (47 per cent of those providing usable information) knew of over 20 per cent of their personal capital gains tax clients who would not sell as a result of capital gains tax and two firms put the figure as high as 61–70 per cent. These figures are necessarily a minimum of the extent of lock in, since they refer only to clients of which the accountants had knowledge; some clients might retain assets because of gains tax without their accountant being aware of the motive for their behaviour. Thus it would appear that, before the 1971 legislation, the capital gains tax had an appreciable lock in effect. The 1971 provision by which death no longer counts as realisation is

TABLE 23
Percentage of clients affected by 'Lock in'

<i>Percentage of clients</i>	<i>No. of accountants</i>
1–10	4
11–20	1
21–30	3
31–40	1
41–50	2
51–60	—
61–70	2
	13

bound to accentuate this effect, as capital gains tax is now avoided if the asset is retained until death. The importance of the lock in effect for the health of the economy is a complex issue which cannot be pursued here;⁹ but it is clear that the gain in simplicity by abolishing capital gains tax as a charge at death has been purchased at the cost of some decline in the mobility of capital.

⁹ For a discussion of the problem, see C. T. Sandford, *Taxing Personal Wealth*, George Allen and Unwin, 1971, especially pp. 235–8.

The other recommendations by accountants for capital gains tax reform can be listed briefly; a provision against inflation (3); the possibility of carrying losses *back* against previous profits (1); a more flexible retirement provision (2); provision for the deferment of tax when the disposal was for a consideration other than cash (2); and consolidation of the law (4).

Income tax and surtax

As with capital gains tax, the strongest impression from analysing the reform suggestions of the interviewees on income tax and surtax is the extent to which the Chancellor's proposals appear either to embody them or to go some way towards them. The Chancellor intends to replace income tax and surtax by a single graduated tax from April 1973; the distinction between 'earned' and 'unearned' income is to be retained, but in the form of a surcharge on investment income, above a certain level of income, instead of the present earned income relief. Whilst the amount of this surcharge and the level of income above which it will apply will not be fixed until the 1973 Finance Act, the Chancellor has stated that the first slice of investment income will be taxed at the rate applicable to earned income.

As a short-term measure the Chancellor increased the one-ninth earned income relief to 15 per cent and removed the 'ceiling', thus effectively reducing the maximum rate of taxation on earned income to a marginal rate of around 75 per cent.

The largest number of accountants who commented on surtax were concerned with its £2,000 starting level and particularly its effect on those with unearned income. Thus nine specifically advocated an increase in the starting level. Five of these and four others (nine in all) pressed for an allowance on unearned income to do away with the anomaly of people on relatively modest incomes paying surtax. Five accountants, two of those who sought an increase in the starting level and three others, were particularly concerned with widows and pensioners on investment income who, it was felt, often suffered from the distinction between earned and unearned income. One accountant thought that a distinction between saved and inherited wealth would be helpful; and three spoke of the difficulty for the layman of ascertaining where surtax commenced.

Seven advocated specifically what the Chancellor's long-term proposals contain – the abolition of surtax as a separate tax and its fusion with income tax. The interim provisions must also have pleased the five accountants who urged the reduction of top rates, two of them specifically on grounds of incentive. The two accountants who advocated the simplification of the fractions (two/ninths, one/ninth) must also feel that

the Chancellor has moved in their direction; and the three accountants who urged the need for a more attractive tax allowable pension scheme for the self-employed must have felt that the 1971 Finance Act went at least some way to meet their case.

Beyond these points relating to the provisions of the 1971 Finance Act, were a miscellaneous group of proposals including the fusing of separate schedules with possibly the similar treatment of earned and unearned income (3); putting Schedule D Case III on a current basis (2); simplifying the treatment of overseas income especially in relation to pensions (1); the levying of income tax only on actual income (2); introducing a carry forward of unused allowances for Schedule E and income smoothing (1); the possibility of filing a 'no change' claim for allowances (1); the raising of the limit for P.I.D.s (1); a continuous review of exemption levels (1); a reduction in the cost of repayment claims (1); greater publicity for tax certificates (1); and the possibility of re-opening a determined appeal on the grounds of error or mistake (1).

On administration, the recommendation of five accountants (with one against) that surtax should be administered at local level has been overtaken by events. Not so the comments on PAYE which are very relevant to the Government's current thinking on the reform of tax administration. As many as 25 accountants reported that the system seemed to work well, but there were a number of reservations and critical comments. Four of the 25 confined their praise to simple cases only – e.g. *not* those of itinerant workers and those who change employment often; one said that codes and allowances change too often and another thought that expenses rules should be relaxed.

We have already noted the widely held view that PAYE was operated by poor staff. Four practitioners made the point that PAYE is unnecessarily complicated for employers to administer because there are too many deductions for the employer to make and because the onus is on the employer to find out about moonlighting, etc. They argued that there should be an annual return of income for all taxpayers each year and an annual assessment.

Two accountants thought that PAYE makes workers more aware of tax deductions, especially on overtime; one went on to add that this leads to evasion of tax on part-time earnings and over-reimbursement of expenses from employers, with the employers' collusion.

We have already noted the adverse comments on the revisions to the income tax form (p. 18). Three accountants commented unfavourably on the failure of the Inland Revenue to set out assessments in a clear way; two indicated that, where a Schedule E taxpayer

has a small source of other income, it is often set against allowances on the tax assessment – but this other income is not explained or set out in detail. One of these two and a further accountant also instanced that the practice of making assessments on each source separately causes great difficulties especially where some allowances are set against each source.

Corporation tax

Sixteen accountants held that corporation tax was simple to administer; and six others maintained that it worked well apart from the close company provisions. A further accountant said that it had been simplified in some ways, whilst five considered that relating tax liability to the period in which profits were earned had been an improvement.

The majority of the other comments related to *shortfall*; the next aspect most frequently referred to was *Schedule F*.

The general views on the difficulties of shortfall have already been outlined (p. 12). Three accountants argued that the shortfall rules could be relaxed and another that they could be completely abolished. Several accountants, however, held that shortfall did not cause much bother in practice and two maintained that the Inland Revenue was adopting a more reasonable attitude to shortfall problems.

Monthly accounting under Schedule F was widely held to be time-consuming (p. 13). One accountant held that the form was unnecessarily complicated and did not set like against like as required by the annual return. There was also the usual allegation that Schedule F constituted double taxation.

All these problems are likely to be solved or transformed by the new corporation tax which, either by split-rates or imputation, will remove discrimination against distributions.

Two accountants who argued for the replacement of investment grants by allowances must have been pleased with the Government's reforms.

Estate duty

Despite the actions of Chancellor Jenkins in extending the gifts *inter vivos* period and blocking avoidance loopholes in the 1968 and 1969 budgets, estate duty still emerges as the most avoidable tax (p. 22). In the final open-ended interview question, of the 23 respondents offering comments on estate duty, ten mentioned avoidance. Four dubbed payment of estate duty voluntary except for the unfortunate and the foolish, and one of these maintained that it was possible to take avoiding action actually after the death where the deceased had owned a limited company – by adjusting year ends and accounting periods. Three other accountants, as well as one of the four, referred to it as the biggest single area of avoidance, especially for the

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wealthy (2). Something of a vicious circle appeared. One accountant held that it was the main target of avoidance schemes because it was so unfair; whilst two held that the avoidable nature of estate duty *made* it extremely unfair. A further accountant blamed the complexity of the tax on over-sharp tax planners from which the innocent suffer.

Three accountants who had urged the raising of the exemption limit on small estates must have been pleased by the Chancellor's actions in lifting it to £12,500 in 1971. But in considering this tax, unlike the others, what stands out is the *lack* of major Government proposals. Indeed, as the comments on avoidance suggest, estate duty is *the* direct tax which now stands in need of major reform.

Suggestions of detail by individual accountants include: increase the small gifts provision; drop goodwill valuation for businesses; substitute market value for probate value for assets sold within a year of death; allow the costs of selling assets, e.g. valuation fees, against duty; increase the time before interest is charged on duty due; drop the time-wasting practice of estimated affidavits.

There was also a call from several accountants to consolidate the duty.

10. Concluding reflections on the hidden costs of taxation

In this final section we attempt to indicate the nature and characteristics of some of the hidden costs of taxation. We are not seeking to offer a comprehensive statement on hidden costs, nor even on that part of hidden costs which are compliance costs. Rather we are seeking to draw out the implications of those hidden costs which have emerged from this survey of accountants; as a result some important aspects of hidden costs are omitted or only touched upon.¹⁰

The nature of hidden costs

Some of the community's resources, capital and labour, especially skilled labour, are employed in ensuring that the requirements of the tax system are met. But for this need, these resources could be used elsewhere in the economy. This is the main element in the real compliance costs of taxation.

In so far as these resources are used to give the taxpayer advice and assistance, their cost is reflected in the fees taxpayers pay to their professional tax advisers: but two qualifications need to be borne in mind. First, the fee for any *particular* piece of tax work does not always accurately reflect the value of the resources used. Thus some accountants felt unable

¹⁰ A fuller consideration of these other aspects (e.g. the 'time' costs incurred by the taxpayer) will be contained in the full research findings to be published in book form.

to charge the economic cost of capital gains tax work; or have tempered the wind to the shorn lamb by undercharging clients known to be of limited means. Correspondingly, although a few accountants argued that there were *no* aspects of tax work which were very profitable, there are clearly some aspects of the work (especially where tax saving is a high multiple of fee) which are charged above economic cost. Second, and more significant, much work not billed as tax work is tax-generated; it includes general accountancy and audit work undertaken so that the requirements of the tax authorities can be met. But for liability to tax, the work need not be done. Our data suggests that for business clients tax-originated work not specifically billed as tax work may amount to two or three times that billed as tax work. On the other hand, although it is tax-generated it ought to have a lower 'weighting' in assessing compliance costs than specific taxation services, since it may be presumed that a more accurate statement of accounts may bring efficiency benefits to firms and to the economy.

Besides general tax advice, the taxpayers may also have to pay for professional valuers for certain property liable to capital gains tax and estate duty, and occasionally to resort to counsel.

Some compliance costs for tax services may be incurred by third parties who are required to act as agents for the Revenue. This happens with PAYE where the employer needs either to administer this aspect of the tax system through labour employed in his business or by hiring the services of a private accountant. PAYE administration emerged from the survey as relatively unprofitable work and costly to administer for clients too small to have a wages clerk. Whilst the immediate charge falls on the employer, depending on the market conditions he may be able to shift it forward to the consumer or backward on to his employees; but wherever it ultimately comes to rest, it is a compliance cost that has to be met.

A further compliance cost, taking up resources which might have been otherwise employed, is the time the taxpayer himself has to apply to his own tax affairs, even when he employs a professional tax adviser. This aspect of compliance costs does not figure prominently in a survey confined to advisers. But several accountants mentioned it, especially in relation to capital gains tax. One accountant's hope of getting a profit from capital gains tax work was to require his *client* to keep an investment register.

Besides the cost, in money or real resources, of tax compliance, there are costs of a psychic nature, none the less significant for being imprecisely measurable. One of these is the hardship and injustice from a system where tax payments may on occasion differ significantly from true liability. If a taxpayer pays

more than he should, he suffers; if he pays less, the body of taxpayers suffer; and different treatment of those with the same taxable capacity is inequitable. Again, a number of accountants referred to the anxiety which tax returns generate in some taxpayers. As one put it, 'clients do not often come specifically for tax saving: they come mostly to lift the burden of worrying about taxation'. The worries are increased where the law is too complex for taxpayers to understand; and where 'estimated assessments', sometimes far in excess of actual liability, are issued by the Inland Revenue.

Some aspects of tax generate complex compliance costs, of which a notable example is avoidance. Some might argue that costs generated by tax avoidance ought not to be considered compliance costs as they are not a necessary part of meeting the requirements of the taxing authorities; but they are, to some extent, an inevitable concomitant of any tax system and as such can reasonably be regarded as a cost of its operation. From the evidence of the survey the costs associated with avoidance are, first, the resources taken up in providing advice on tax avoidance which, as several accountants made clear, often included the most highly skilled man in the office. Second, resulting from particular forms of avoidance, costs such as a less convenient or efficient form of business organisation; or psychic costs such as the unhappiness of a foreign domicile, taken up solely to save tax. But there may be further psychic costs in the form of injustices and inequities. The concept of avoidance used by the tax lawyer or accountant embraces widely different possibilities. This is clearly brought out by the sizeable group of accountants who, whilst happy about much that takes place under the umbrella of avoidance, disapproved or had reservations about 'complex', 'artificial' or 'extreme' forms. There is clearly a difference between the avoidance of the retired poor in transferring their savings out of a building society and the death bed purchase of a farm to be sold again after the benefit of reduced estate duty has been gained. The second frustrates the intention of the legislation, the first does not. It was clearly the view of some accountants that the avoidable nature of estate duty made it an inequitable tax; whilst two accountants pointed out the unfairness of avoidance to the community: it reduced tax yield and hence pushed up tax rates.

Evasion, too, has possible costs in the time and energy of the evader, planning his evasion; but more, it causes in an extreme form the inequities associated with some forms of avoidance.

The costs of running the tax system on the Inland Revenue side may be treated as a hidden tax cost but are not a compliance cost. However, the efficiency with which the duties are performed affects compliance costs: the slower and more inefficient is the

Inland Revenue, in general, the bigger taxpayer compliance costs become in real and money terms. The more inaccurate is the Inland Revenue, the greater are the psychic costs of inequity and anxiety.

Some characteristics of compliance costs

Examination of the nature of compliance costs in this survey leaves two dominating impressions about their characteristics. First, they have a marked tendency to regressiveness and inequity. Second, there are particularly high compliance costs of change.

The regressiveness of compliance costs

Compliance costs often bear little relationship to tax liability or to income. The small liability capital gains tax may require as much work and hence impose as large an economic cost as the large liability. Or again, in two apparently similar cases of capital gains tax which result in the same liability, the compliance costs of one may be much higher than the other because of a complicated share history, or a particular problem in discovering information, or the need for a special valuation, resulting in horizontal inequities. The tendency to regressiveness is found in other ways too. In matters of negotiating a valuation of close company shares for capital gains tax or estate duty, a highly skilled accountant can effect large tax savings for his client; similarly, with shortfall. The scope for negotiation introduced by the law is such that the qualities of the negotiators may be more important than objective factors in determining tax liability. Moreover, rich clients are better placed than poor to afford accountants with the requisite skill. Again, PAYE administration, as several accountants argued, is especially costly for the small man without a wages clerk. One accountant who did much PAYE work held that costs were proportionately higher for firms with small payrolls and instanced a firm of one employee who would be charged half as much as a firm with four employees.

High compliance costs of change

The changes in the tax system between 1965 and 1970 added substantially to compliance costs and demonstrate the wisdom of the adage that 'an old tax is a good tax'. The new legislation rendered obsolescent accountants' skills acquired from long experience of repealed taxes and imposed an immense problem of assimilation; as one accountant put it, the 1965 Act could be easily assimilated by a man in his twenties, but not by a man in his forties. We have examined at length the decline in the efficiency of the Inland Revenue following the new legislation; and the problem was even bigger for the Revenue authorities than

for the accountant because a sort of concertina effect seems to have operated which squeezed out Inland Revenue staff from both ends. On the one hand a depressing backlog of work led to frustration in the Revenue service; on the other, there was more demand from taxpayers for private tax advice. Consequently, as the Estimates Committee recorded: 'Since 1965 there has been a marked increase in resignations by experienced fully trained Inspectors. So far as the Branch can tell this is due to the increased complexity of the tax system making such Inspectors more attractive to the accountancy profession and commerce. The ability of outside professions to offer higher salaries and better prospects probably means that this will be a permanent source of wastage.'¹¹

The new legislation also added to compliance costs by its rough edges and was a big factor in taxpayer lack of understanding.

This does not mean that we should not have new taxes for old. It does mean that any new tax, to be justified, must be better than its predecessor by a sufficient margin to outweigh the substantial costs of alteration. It also means that every effort should be made by discussion to eliminate as many imperfections as possible before legislation; and that future tax policy should pay close attention to the capacity of the Inland Revenue for handling new work.

There is one encouraging thought to emerge from this consideration of the compliance costs of change: that as a tax becomes 'older' so compliance costs will diminish. This will surely be true of capital gains tax – partly because of legislation to remedy the more glaring defects; partly because accountants, taxpayers and Revenue officials become more used to it; partly because procedures are adopted for coping with it – like record keeping which, in the course of time, will much reduce if not eliminate the big problem of obtaining the basic data; and also because, as we move further away from the 1965 base line, there will be a diminishing number of cases where liability is small (and hence compliance costs relatively high) because most of the gain has occurred in a pre-tax period.

There seems little doubt that the significance of compliance costs was underestimated in the tax reforms of the second half of the 1960s. The Chancellor's recent changes, especially of capital gains tax, suggest that he may be more aware than some of his predecessors of the need to take them into account. But with VAT a certainty, and income tax self-assessment a possibility, their significance is unlikely to diminish in the near future.

¹¹ *Op. cit.* p. xii

Appendix

Accountants' fees and their relationship to tax liability

This Appendix sets out a summary analysis of the answers received to the first section of the supplementary questionnaire on fees which might be charged for a series of tax cases. It was answered by 19 accountants. The introductory instructions were as follows:

Listed below are a series of brief descriptions of tax cases. In each case would you estimate, as closely as is possible, the fee that you would charge the taxpayer for investigating, calculating and negotiating his tax liability with the Inland Revenue. Please assume that these taxpayers, apart from the stated differences, are in all other respects alike, e.g. age, allowances, etc.

We realise that in normal circumstances you would base your charges on time records or on an evaluation of the work done. In the following cases we are asking you to estimate fees from your experience of cases similar to the ones described. It is assumed that the cases described relate to existing clients and not to clients who come to you for the first time, and that a normal charge is made including your normal element of profit.

Questionnaire			Summary of Replies			
<i>Tax or taxes involved</i>	<i>Nature of tax work to be done</i>	<i>Approximate tax liability</i>	<i>Minimum fee</i>	<i>Maximum fee</i>	<i>Average fee</i>	<i>Average fee as per cent of tax liability</i>
		£	£	£	£	
Capital gains	1 Calculate, negotiate and finalise gain for a particular tax year on disposal of chargeable freehold property valued currently at £12,000					
	(a) where the entire property is sold, having been acquired for cash before 1965	1,000	10	40	18.1	1.8
	(b) where the entire property is sold having been left to the present owner in a pre-war will	1,000	10	60	24.1	2.4
	(c) where the original purchase was for cash before 1965 and there is a part disposal of the property for cash	200	15	60	24.8	12.4
	(d) where, as a result of a previous part disposal, a 1965 valuation is obligatory and where a further part disposal occurs for cash	200	10	60	26.4	13.2
	(e) where the entire property is sold, having been acquired for cash before 1965	3,000	10	50	20.1	0.7

Respondents' Comments on Question 1

Eight accountants commented that tax liability was irrelevant to the fee, which depended on the length and complexity of the work. Nine other comments were received including the following:

- (i) There are likely to be other professional valuations necessary in nearly all cases.
- (ii) It is assumed that these are extra costs on top of tax work costs for the year.
- (iii) The above fees would be reduced to about two-thirds if dealt with as part of the normal annual agreement for the client's tax liability.
- (iv) The estimates given are assuming an election is made and no professional valuer employed.
- (v) It might be more helpful to know if election for 6.4.65 values were to be made. I have assumed not or negotiations with the district valuer would add at least £10 to £15 to the fee (except in (d)).

Questionnaire			Summary of Replies			
<i>Tax or taxes involved</i>	<i>Nature of tax work to be done</i>	<i>Approximate tax liability</i>	<i>Minimum fee</i>	<i>Maximum fee</i>	<i>Average fee</i>	<i>Average fee as per cent of tax liability</i>
		£	£	£	£	
Capital gains	2. Calculate, negotiate and finalise gain/loss for a particular tax year on disposal of <i>quoted</i> shares from a portfolio whose market value is about £50,000 (It is assumed that your records of clients' transactions are good and the appropriate reference books are readily available)					
	(a) where the portfolio is made up of 10 separate holdings and the disposal is of 3 holdings only, originally acquired for cash since 1965, and not added to since, except by way of bonus issues, etc.	1,000	2	25	12.0	1.2
	(b) where the portfolio is made up of 50 separate holdings and the disposal is of 15 holdings originally acquired for cash since 1965, and not added to since, except by way of bonus issues, etc.	1,000	4	50	23.3	2.3
	(c) where the portfolio is made up of 50 separate holdings and the disposal is of 15 holdings acquired for cash and added to by purchase at different times before and since 1965. The election for a 1965 valuation has not been taken	1,000	8	60	36.3	3.6
	(d) where the portfolio is made up of 10 separate holdings and the disposal is of 3 holdings only, originally acquired since 1965, but not added to since, except by way of bonus issues, etc.	10,000	2	30	12.4	0.1

Respondents' Comments on Question 2

Five commented on the irrelevancy of tax liability to fee. Comments (ii) and (iii) on Question 1 are repeated.

Two accountants commented on the problem of getting information for the comparison; if it was difficult to obtain costs would be higher.

Questionnaire			Summary of Replies			
<i>Tax or taxes involved</i>	<i>Nature of tax work to be done</i>	<i>Approximate tax liability</i>	<i>Minimum fee</i>	<i>Maximum fee</i>	<i>Average fee</i>	<i>Average fee as per cent of tax liability</i>
		£	£	£	£	
Capital gains	3. Calculate, negotiate and finalise gain for a particular tax year on disposal of holding of ordinary shares in an <i>unquoted</i> company for which you have acted for many years but for which, as far as you are aware, there is no agreed 6 April 1965 value					
	(a) where the shares were acquired and sold for cash	1,000	5	125	38.6	3.9
	(b) where the shares were acquired for cash but disposed of by way of gift to client's son	1,000	10	150	47.6	4.8
	(c) where the shares were acquired for a consideration other than cash and disposed of by way of gift	1,000	15	175	64.5	6.5
	(d) what might the additional cost be if the company had a complicated share history including reconstruction or merger before 1965	—	+10	+150	+57.8	+5.8

Respondents' Comments on Question 3

Two accountants commented on the irrelevancy of tax liability to fee.

Eight other comments were made, mainly concerned to stress the variations in fees likely in this kind of case according to circumstances and the particular difficulty of estimating (d).

Questionnaire			Summary of Replies				
Tax or taxes involved	Nature of tax work to be done	Approximate tax liability	Minimum fee	Maximum fee	Average fee	Average fee as per cent of tax liability	Average fee as per cent of income
		£ £	£	£	£		
	4. Calculate, negotiate and finalise personal client's tax liability for a particular tax year						
Income	(a) where the client's income is £4,000 for the year, from one earned source, from which tax was deducted under the PAYE scheme	1,000	5	25	12.1	1.2	0.3
Income/ capital gains	(b) where the client's income is £4,000 for the year, from one earned source, from which tax was deducted under the PAYE scheme and where the client has disposed of 4 holdings of quoted shares (total proceeds £600)	1,000 40 — 1,040					
Income	(c) where the client's income is £1,500 for the year, from one earned source from which tax was deducted under the PAYE scheme	200	4	25	11.1	5.6	0.7
Income	(d) where the client's income is £4,000 for the year, derived in approximately equal proportions from the following sources: rental income, earned income, deposit account interest and unearned income from abroad	1,000	10	50	28.4	2.8	0.7
Income	(e) where the client is a widow with unearned income of £1,500 from a holding of shares (none of which was sold during the period) and where the income is subject to an annual repayment claim	450	5	30	13.1	2.9	0.9
Income/ capital gains	(f) where the client is a widow with unearned income of £1,500, subject to repayment claim and where the client has disposed of 4 holdings of quoted shares (total proceeds £600)	450 75 — 525	7	35	19.6	3.8	1.3
Surtax/ income	(g) where the client's income is £8,000 for the year, from one earned source, from which income tax was deducted under the PAYE scheme	2,000	5	40	16.1	0.8	0.3
Surtax/ income	(h) where the client's income is £10,000 for the year, derived in approximately equal proportions from the following sources: rental income, earned income, investment income, deposit account interest and unearned income from abroad	4,000	10	100	46.6	1.2	0.5

Respondents' Comments on Question 4

One comment on the irrelevancy of tax liability to fee. Three other comments including:

Any income from different sources adds complications so the equality of proportion is irrelevant. All answers depend on the quality and completeness of information provided by the client.

Progress through dilemma: A compromise solution to the problem of accounting for changing prices and values

Tom K. Cowan

Common dollar accounting: a pessimistic view

The provision of price-level adjusted (common dollar) accounting reports as supplements to the reports based on historic costs is unlikely to provide an adequate and accepted solution to the problem of accounting for price and price-level changes.

The grounds for this view are partly conceptual; there are reasons for believing that there is no such thing as a common dollar. But the main grounds for this pessimistic view are pragmatic, and necessarily so since accounting is a pragmatic art.

If common-dollar accounting were a solution to the problem of accounting for price changes, there would have been much more evidence of its usefulness than is apparent in modern accounting practice. The profession has been aware of the concept for close on forty years. Sweeney¹ brought his writings on the subject to a culmination in the publication of his classic, 'Stabilised Accounting', in 1936. Ralph C. Jones shocked the profession with his two major research studies of the subject in 1955-56.² Perry Mason produced his monograph in 1956;³ and Mathews and Grant contributed a useful Australian study in 1958.⁴ It is now ten years since the Accounting Principles Board of the American Institute of Certified Public Accountants '... agreed that the assumption in accounting that fluctuations in the value of the dollar may be ignored is unrealistic . . .'; and set in train the study that

resulted in the publication of ARS 6 in 1963⁵ with its recommendation that 'The effects of price-level changes should be disclosed as a supplement to the conventional statements.'⁶ It is clear that what was intended by this recommendation was the mandatory furnishing of fully adjusted financial statements, with explanations of their meaning and significance, using an index of the general price level.⁷ One could quote many other references to scholarly works on the subject of accounting for price-level changes. These are only highlights in a large volume of research and writing. Indeed, there must be few instances where so much has been written on an important subject and so little achieved.

The methodology of common-dollar accounting has been common knowledge in the profession for a long time. Why is there not more evidence of its application? Would not one have expected trend setters in company reporting to be leading the way in the provision of the supplementary reports recommended in ARS 6? Should not price-level adjusted accounts have been a feature of the service of financial analysts over the last five to ten years?

Application to external reports - by evolution or regulation?

In the evolution of accounting practice, we have come to expect a more or less inevitable progress towards the improvement of the accounting service and a constant adjustment to meet the needs of a changing society. Why has this not happened in regard to this 'Achilles' heel' of the profession? Is this a case where progress is possible only under the initial compulsion of law or regulation?

In this field, the odds are against the innovating

¹ Henry W. Sweeney, *Stabilised Accounting*, Harper & Row, 1936.

² Ralph C. Jones, *Price Level Changes and Financial Statements - Case Studies of Four Companies*, American Accounting Association, 1955. *Effects of Price Level Changes on Business Income, Capital and Taxes*, American Accounting Association, 1956.

³ Perry Mason, *Price-Level Changes and Financial Statements - Basic Concepts and Methods*, American Accounting Association, 1956.

⁴ Mathews, Russell and John McB. Grant, *Inflation and Company Finance*, Sydney, Law Book Co of Australasia Pty Ltd, 1958.

⁵ 'Reporting the Financial Effects of Price-Level Changes', *Accounting Research Study*, No. 6, American Institute of Certified Public Accountants, New York, 1963.

⁶ *Ibid.*, p. xi.

⁷ *Ibid.*, pp. 53-5.

company. Inflation creates a financing problem that turns the company to the market for additional funds to finance the *present* level of operations, and also the expansion of operations which inflationary conditions and market growth may stimulate. Success on the money market requires earnings levels that are at least comparable with those of one's competitors. Price-adjusted accounts in times of inflation show lower operating profits, higher net assets, and considerably lower rates of return than accounts prepared on an historical cost basis. Under such conditions, only compulsion is likely to achieve general adoption of common-dollar accounting.

Before there could be regulation or legislation to compel companies to produce supplementary price-level adjusted accounts, it would have to be demonstrated clearly that this was in the public interest. The absence of regulation and legislation would suggest that this has not been done.

The argument that capital is eroded during times of inflation through the taxation of fictitious profits is a sound justification from the viewpoint of the companies concerned; but there are reasons for doubting its strength as an impetus to action by society. The State has still to obtain its taxation revenue; so that any adjustments would be made mainly in the interests of equity among taxpayers. Overall, the adjustments would favour business taxpayers, mainly companies, rather than individual taxpayers. There are reasons for believing that company income tax is really indirect, since it may be taken to be included finally in the prices paid by individual citizens for commodities and services. This leaves us with equity among business taxpayers, mainly impersonal public companies, as a reason for action by society under the taxation heading. Apart from the temporary and distorting palliatives of accelerated depreciation, investment allowances, and LIFO inventory valuations, no action has been taken. Equity as between companies with different asset and financial structures has not been sufficiently telling as to justify the administrative problems of an alternative to historic cost reporting of taxable income. It is clear that some stronger reasons will be required before action by society through regulation or legislation can be expected.

It may be claimed that the trend towards increased automation, with a higher proportionate investment in depreciating fixed assets, may strengthen the case for action; but this argument is weakened by the higher rate of obsolescence typical of an era of accelerating change, and by the provision of accelerated depreciation as a means of alleviating through postponement the tax effects of inflation. Further, the taxpayer is the business concern, with its capacity (except in regulated industries) to pass on costs, in-

cluding taxes, in prices. One may conclude fairly confidently that little stimulus to social action can be expected from this quarter.

Of much greater potential as a stimulus to social action is the industrial unrest that is all too typical of today. One of the factors behind this unrest is the misleading view of the profitability of company operations that is provided through company reports prepared on an historic cost basis. The extent of the discrepancy is a factor of the rate of inflation, and that has tended to be relatively high during the last few years. The profits disclosed by companies provide an apparent justification for wage increases in excess of productivity increases. These lead in turn to an acceleration of the inflationary spiral and an enlargement of the discrepancy between disclosed and real profits and profitability. This is a very serious feature of modern society for which our profession must accept some major responsibility. On the other hand, it is the directors who are primarily responsible for company reports. Why have they not taken the initiative in instituting a form of reporting that has regard to the effect on profits and profitability of price-level changes at least? They and their auditors may object to introducing the subjectivity of specific price changes into the accounts; but surely there can be little objection on these grounds to the introduction of the relatively objective price-level adjustment?

The dilemma of directors

The boards of directors of many companies face a dilemma in their reporting of profits, assets, and rates of return during a period of inflation. If inflation is at say 10 per cent for the year, and the prices and costs of the company are in line with the price-level increase, then the company will need essentially 10 per cent more dollars to finance the same level of physical activity. In the short term, this will apply to debtors and to inventories. In the longer term, it will apply to fixed assets also. Companies will look partly to profit retention for this finance; but high retention will depress share prices and increase the costs of raising additional capital. Most of the additional finance will have to come from the money market, on which companies compete for funds. Realistic reporting on profits and profitability by a company would require a distinction between 'real' profits and fictitious profits. The application of price-level adjustments to the company's reports would reduce the disclosed profits, increase the net assets, and reduce materially the rate of return on investment. This would depress the value of the company's shares in itself, and this effect would be accentuated if the dividend rate were reduced to bring the dividend pay-out within the limits of the 'real' profits disclosed.

Unless all companies are required to report in similar terms, then no board of directors is likely to institute price-level adjusted company reports. But the alternative has its bad features also. To emphasise dollar increases and percentage increases in sales and profits, to report dollar expansion as though it were real expansion, and to base dividends on disclosed profits rather than on real profits, may create a situation where a company may compete on favourable terms on the money market. On the other hand, such reporting fails to disclose the facts of the situation to interested parties.

So far as shareholders and investors are concerned, this would not matter unduly if the spread of assets between fixed and monetary were relatively uniform, and if the spread of sources of funds were relatively uniform. Since neither condition is likely to apply over a range of alternative investments, shareholders and investors are left to apply their own adjustments and judgments in assessing the relative effects of inflation in their interpretations of company results. The situation of managers of enterprises is much the same.

What may well be far more significant and of much greater social importance is the effect of the information distortion of unadjusted historic cost based reporting on worker and consumer interests. The reporting of absolute sales and profit increases and of rates of return on funds without adjustment for the changing value of money provides worker and consumer interests with the very evidence that they are seeking, the one to obtain wage increases and the other to press for state action to control prices. The results of the misinformation may well be contrary to the social interest—in industrial unrest, inflation, and unwarranted interference with the price mechanism. Before action by society can be expected to ensue, the fact and materiality of the distortion and of its effects have to be made evident. Our profession should examine its role in this exercise in analysis and education.

Financial analysts: internal reports

Accepting that the odds are against the innovator in accounting for price-level changes, it is significant that there is so little evidence of the application of price-level accounting by financial analysts and in reports prepared for management. It is most unlikely that this is due to the conservative stolidity that for so long refused to recognise the fact of a changing value dollar in company reporting. The primary justification for accounting action is usefulness; and this is particularly true in the fields of management accounting and financial analysis. Accounting is a pragmatic art. One is forced to conclude that accounting for price-level changes would have been more widely adopted if it had been more widely recognised as being useful.

It would be helpful to consider why it has not achieved this recognition.

One reason for the non-recognition of common-dollar accounting as a useful reporting system is an underlying and intuitive uneasiness about the concept itself.

This uneasiness arises partly from communication aspects of the problem. Accountants and those to whom accounting reports are addressed think in terms of dollars and not in terms of purchasing power. A dollar is a dollar now, and it was a dollar ten years ago. A communication is effective only as it communicates; and one must be concerned to express oneself in terms that are understood by those whom one is addressing. The communication situation has to be recognised as being dynamic: much can be achieved by means of education, but it takes time to change ingrained ways of thinking. There are good reasons for believing that the vast majority of the readers of company financial reports think in dollar terms rather than in purchasing power terms when they examine these reports. It is difficult to assess how far this is inherent and how far it is due to the form of company reports presented over the years of their experience. If reports were couched in purchasing power terms, would these readers change their mode of thinking about the data included in these reports?

There is some uneasiness too about whether there is such a thing as a common dollar. The concept of the common dollar infers an equating of purchasing power. This equating of purchasing power may be achieved through a general price index developed from the comparative costs of a 'shopping basket' of commodities and services. The application of this index to historic cost data will result in a presentation of data expressed in dollars of more or less equivalent purchasing power. But there are grounds for questioning both the accuracy and the significance of this conversion process.

Wealth may be thought of as 'well-off-ness', and the dollar as a unit of 'well-off-ness'. If this view is accepted (and it is put forward with some diffidence), then there are grounds for questioning the conceptual soundness of using a general price index as its measure. In the short term the application of a general price-level adjustment may give a close approximation to the expression of 'well-off-ness' in dollar terms. Over the longer run, the measurement of assets in price-level adjusted dollars may be expected to diverge from a measurement in terms of 'well-off-ness'. In an age of rapid technological progress and change, we find constantly changing commodities in a constantly changing satisfaction environment (i.e. with different relative values being attached to different commodities and services). One cannot deny the probability that money

has changed in value through time. The problem is whether there is available to us a valid and objective means of measuring the changes in the true value of the dollar. Usefulness is related to the general acceptance of a particular measure. The general price index may well provide the most objective and convenient measure of price-level changes available to us; but at best it can only be regarded as a compromise solution to a most complex problem, and therefore one of limited validity.

There is little doubt that the recognition of conceptual inadequacies is not in itself the main reason for the non-adoption of supplementary price-level adjusted accounting reports. One is forced to conclude, perhaps regretfully, that the main reason for non-adoption is pragmatic (though it may be based on these conceptual inadequacies); they are not regarded as being sufficiently useful to offset their disadvantageous features.

As we have seen, the odds are stacked against the innovator. There are significant 'costs' to be borne by the provider of supplementary price-level adjusted statements – not only the results of reporting lower profits and lower rates of return, but also the costs of introducing confusion into the communication process in the form of two sets of accounts for the same facts. Further, there is a cost involved when one adopts a partial solution to the problem of expressing facts in real terms, as is done when we measure in price-level adjusted historic costs rather than in current costs or values. The 'costs' associated with the provision of supplementary price-level adjusted financial statements are high. At the same time, the revenues which common-dollar reporting may be expected to provide are eroded because these reports are not the main reports but are supplementary to the principal reports. To achieve an effective communication, a company should have only one report on income and one report on position. Such research studies as I have seen suggest strongly that, if two reports are presented, one will tend to be disregarded as irrelevant – as tends to be the case with the balance sheet of the holding company in a group report. This could be what has discouraged the innovators in company reporting practice.

But their main lack of usefulness is to decision-makers within and outside the company. If this were not so, then management accountants and financial analysts would be applying price-level adjustments in their analyses of performance and position. I am not suggesting that they disregard price-level changes entirely; but rather that they do not apply the comprehensive set of adjustments involved in price-level accounting. The reasons may well be:

(1) That historic cost based accounts are regarded

as more significant than price-level adjusted accounts because they are more closely related to cash flows, and the results of business activity must find expression in the end in cash flows.

(2) That price-level adjusted historic costs are not necessarily more relevant for the decision-maker than historic costs.

If historic costs fail to express current values, then price-level adjusted historic costs will also fail,⁸ for the assumption that all prices follow the average of the 'shopping basket' comprised in a general price index is quite ridiculous. Further, we are still left with the distortions resulting from excessive depreciation provisions, understated inventory valuations, rejuvenating repairs, and the failure to account effectively for intangibles. What would be the significance of a price-level adjustment applied to the residue of the historic cost of a computer purchased even five years ago?

The alternatives

At this point, the advocates of current or replacement cost accounting may propose current or replacement costs as an alternative. At least one finds notable examples of replacement cost accounting in use in internal management information systems, with some even extending to company external reporting.⁹ The conclusion is that replacement costs receive a recognition of usefulness that is denied to price-level adjusted historic costs; and this is natural, since they provide in the matching process measures of long-term viability and approximate at least one concept of opportunity cost.

On the other hand, the comprehensive application of current or replacement costs to accounting is open to criticism on at least two grounds:

(1) The subjectivity involved – though this may well be regarded as not too high a price to pay for the added relevance of the output from the system; and

(2) The inherent assumption that the nature of the business and the direction of its investment in assets will not change. If the replacement costs of all the non-monetary assets of an enterprise increase during the year by a uniform 10 per cent, and the price-level is stable, the replacement cost accounting advocates¹⁰ would not recognise as a gain during the year the increase in the economic worth of the entity. The adjustment would be treated as 'Capital Maintenance'.

⁸ Though admittedly one would expect there to be less overall divergence than between unadjusted historic costs and current values.

⁹ For example, N. V. Philips Gloelampenfabrieken.

¹⁰ For example, R. S. Gynther, *Accounting for Price-Level Changes: Theory and Procedures*, Pergamon Press, 1966.

Some companies have adopted the device of periodic revaluation of certain fixed assets, particularly land and buildings. The cynic would say that these revaluations have taken place when the directors believed that the company could support a higher total dividend rather than because of a desire to achieve a more realistic balance sheet. In reply, one might point out the close relationship between the value of the specialised and 'sunk' assets of an enterprise and the profitability of the enterprise. If a company can 'afford' to write up such assets because of its level of profitability, then it is probable that the addition to the book values of these assets is justifiable. Such revaluations are seldom applied to plant; yet the differences between the book values of plant and the values based on replacement costs of plant (e.g. insured values) may be very great. A related criticism is the failure of most replacement cost exponents to have regard to the income tax factor in dealing with the revaluation credits, since the amount of the write-up is not normally deductible for income tax purposes as depreciation as the services embodied in the asset are used up.

Problems and achievements

In accounting for price changes, we have two related problems rather than one problem:

- (1) The problem of accounting for price-level changes; and
- (2) The problem of accounting for specific price changes.

We are operating in an environment that is conservative, and to some extent desirably conservative, since conservatism is related to confidence. However, our very conservatism in the accounting process has led us into non-conservatism in the reporting of profits; and there are good grounds for believing that this is neither in the best interests of society nor in the best interests of our profession. In reacting to the problem of accounting for price changes, the profession has carried out research studies and engaged in theory development. It has even made recommendations aimed at encouraging the use of supplementary price-level adjusted reports. But in terms of achievement, the attainments of the last forty years have been very small indeed. The vehicle of progress to more realistic accounting measurement has been bogged down in the quagmires of accounting argument – a state of affairs not helped by the timidity of the professional 'driver'. We have sought perfect solutions where there was no perfect solution, and general acceptance where the facts of the environment precluded general acceptance.

By compromise to progress

The essence of accounting theory is 'principle'; and there is no end to the scope for opinion and counter-opinion. The essence of accounting practice is compromise. We have had to find compromise solutions to problems such as depreciation, inventory valuation, and income recognition. If we are to progress in the problem of accounting for price changes, we shall have to begin with a compromise solution – and a more realistic compromise solution than the unattractive and relatively meaningless supplementary report.

To be acceptable, the compromise solution will have to be simple in concept and capable of ready application. It is desirable that it provide the minimum that is necessary to open the way to evolutionary progress towards more relevant accounting measurement; since compulsion is unavoidable. It should involve a minimum of upset to traditional accounting when it is first applied, but it should have an inherent incentive towards accounting in relevant terms. It is claimed that the proposal which follows meets these criteria.

The proposal

The proposal is simply that an annual adjustment should be made for the effect of the inflation of the year on the starting total of share capital and reserves.

The basic entry is (the figures are assumed):

(Debit) Profit and loss	\$40,000
(Credit) Capital maintenance account	\$40,000

Being allowance for inflation, 4 per cent on share capital and reserves of \$1,000,000.

If capital is introduced during the year, the calculation will be more complex.

The effect of this entry is to present the directors with a dilemma:

- (1) If they do not recognise increases in asset values due to specific price changes during the year, then the inflation effect will be shown in full as a deduction from retained profits of the year, and so will affect the view of the company's profitability.
- (2) If they do recognise increases in the value of the assets during the year, they will reduce the inflation adjustment to retained earnings and provide a more favourable view of profitability. On the other hand, they shall have to justify their action to the auditor; and in future years the amount of the funds will be increased, the depreciation charges against revenue will be higher, and the rate of return on funds will be lower.

The capacity of a company to offset the inflation effect will be dependent on the constitution of the net assets. For example, three companies may have net assets as follows:

	Company A	Company B	Company C
	\$	\$	\$
Net assets (financed by proprietorship):			
Monetary assets	1,000,000	500,000	Nil
Fixed assets	Nil	500,000	1,000,000

Company A has no prospect of adjustment. The inflation loss is a reality. Company B, if operating profitably, could apply specific indexes to its fixed assets or make other assessments of the increase in value of these assets; but a substantial inflation loss is likely. Company C may be able to provide a material offset to the adjustment for the year's inflation, but allowance for the taxation effect of a write-up of a depreciating asset will still leave a substantial balance of inflation loss to be reported. The basic inflation adjustment would be the same in each case. The final adjustment, and the 'real' retention of the year, will be different for each company, and will provide valuable information on profitability to the readers of these companies' reports.

If replacement cost accounting is applied to inventories, then the debit entry recognising the increase in value will increase cost of sales and reduce the disclosed profit; while the compensating credit (less provision for tax) will reduce the inflation adjustment for the year.

In such ways, the processes of accounting evolution can be expected to lead us into an era of much greater realism and relevance than is evident in the accounting of today.

The form of profit report that is proposed is along the following lines:

Extract from the revenue and appropriation statement:

Net profit after providing for taxation	\$100,000
Less: Dividends paid and proposed, 10% (equals 5% on shareholders' funds)	50,000
Profit retention for the year	\$50,000
Less amount required to offset the inflation that occurred during the year (transferred to Capital Maintenance Reserve):	
Shareholders' funds	\$1,000,000
Inflation rate	4%
Inflation effect	\$40,000

Profit retention added to the reserves available for expansion of the business (equals 1% on shareholders' funds)	\$10,000
Plus reserves brought forward	\$300,000

Total of reserves, as shown in the balance sheet	\$310,000
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Rate of return on funds:

Dividends paid and proposed	5%
Retained for expansion	1%
Total return	6%

Extract from the balance sheet:

	\$
Share capital	500,000
Reserves	310,000
Capital Maintenance Reserve (Note 1)	240,000
Share capital and reserves	\$1,050,000

Note 1: Capital Maintenance Reserve represents the amount that has to be retained in the business to offset the effects of inflation and so to maintain the purchasing power of the capital committed to the business. The adjustments for the year are:

	\$
Balance brought forward	200,000
Amount required to offset the inflation of the past year (4% p.a.)	40,000
Balance carried forward	240,000

Where an asset is written up to recognise a specific price increase, the adjustment will be:

Asset - for the increase in value	\$10,000
Provision for future income tax - for the tax effect through non-deductibility ¹¹	\$5,000
Revenue Reserve - for the net notional recovery of depreciation	\$5,000

To the extent that the asset was written up above original cost, the excess less provision for tax would be credited to Capital Reserve. The \$5,000 would be

¹¹ Assuming that company tax is 50 per cent.

shown as a deduction from the inflation adjustment for the year:

Inflation effect	\$40,000	
Less increase recognised in the value of buildings (or plant)	\$5,000	\$35,000

The profit retention available for expansion would be \$5,000 higher, and the rate of return would be shown at 6½ per cent.

To the extent that the increase in value of an asset related to earlier years, the entry would be the same but the adjustment would be to the 'Reserves brought forward' figure in the profit statement. If the amount is material, the inflation adjustment and the rate of return calculations should be calculated on the adjusted total of funds.

The adjustment may well show a negative retention. For example, if the retention rate in our example had been 40 per cent, and the inflation rate 7 per cent, then there would be a payment of dividend from capital of \$30,000; and the real rate of return on funds would have been 3 per cent – unless there was an adjustment to the values of fixed assets to offset the effects of inflation. That this disclosure may shock the readers of company reports is no justification for non-disclosure. There are good reasons for believing that many companies today are in just this position. They are showing high profits, and a normal retention rate, but find themselves very short of money. To finance the same physical operations, they require additional funds. Some may come from additional creditors and overdraft, but the balance has to be found from long-term finance. The shortage of long-term funds is evidence of the overstatement of profits and profit retention. This would be enough of a problem in itself; but it tends to be accompanied by pressures for higher wages (and to a lesser extent lower prices) on the strength of the high profits disclosed. It is a matter of considerable importance to society that a more realistic portrayal of profitability is provided in accounting reports.

Under the proposal, the adjustment for the inflationary effect would be mandatory; but the adjustment of asset values would be subject to the judgment of managers and directors, who would have to satisfy the auditor as to the fairness and validity of the adjustments made. From this freedom would develop patterns of conduct and finally standards for general application. That there would be practical problems goes without saying; but there are grounds for believing that they would be no less surmountable than the problems of depreciation and of inventory valuation.

It is suggested that, initially at least, the compulsion

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may be limited to companies whose shares are listed on the Stock Exchange.

Outside of the United States of America, the role of legislative compulsion in the securing of improved standards of company reporting is generally accepted, though its significance has declined with the development to greater maturity of the accountancy profession. It would not be too difficult to give effect to the proposal through legislation in these countries, though it would require the development of a strong body of supportive opinion in the profession and in the business community. A powerful force could be exercised by the Stock Exchanges.

Within the United States of America, there remains a strong bias against the writing-up of assets, even some forty years after the events of the late 1920s and early 1930s. A substantial reduction in this bias is essential to progress in company reporting. The requirement for the price-level adjustment of share capital and reserves as a starting point to evolutionary progress in accounting for price changes would need substantial backing within the profession, by the Stock Exchange authorities and by the Securities and Exchange Commission. Is it too much to expect of an environment which has accepted the conceptually dubious methods of LIFO valuation of inventories and accelerated depreciation?

Some income tax benefits could be introduced concurrently with the legislation or regulation requiring compulsory transfers of inflation adjustments to Capital Maintenance Reserve; and the way could be opened for a greater recognition of the inflation factor in future tax legislation. For example, bonus issues of shares could be exempt from all taxation in the shareholders' hands to the extent that they were made from Capital Maintenance Reserve. This seems entirely reasonable. It would be more difficult to secure exemption from company tax for the net inflation adjustment, unless specific price indexes were developed and accepted for application to the calculation of taxable income. Nevertheless, the recognition in the published accounts of the extent to which profits are regarded by the directors as fictitious is an essential first step towards more equitable taxation under conditions where inflation is a material factor. There may well be a case for some initial tax concessions to encourage the revaluation of assets at the initiation of these procedures. The existence or prospect of income tax benefits would ensure more support for the unavoidable compulsory element in the proposals contained in this paper.

Compromise – a deliberate choice

The essence of this proposal is compromise in the interests of progress. The object is to provide an

opportunity rather than a complete and rigid system. One could be criticised on both counts; but the choice has been deliberate.

In this paper, I have been critical of the concept of the 'common dollar', but nevertheless recommend the application of a general price index to share capital and reserves in order to assess the effect of inflation for the year. I have stressed the relevance to decision-makers of replacement or current costs, but I have not proposed the general adoption of this concept in company recording, analysis and reporting. These are deliberate compromises made in the interests of simplicity, flexibility and acceptance.

The purpose of the proposal is to give an unavoidable, uniform, but minimal impetus to the process of accounting evolution. There are many instances in

history where such interference has been essential; and our profession has examples in its Companies Acts and in the establishment of the Securities and Exchange Commission. It is my belief that progress in external reporting in the future, as in the past, will be dependent on a mix of compulsion and evolution if the form and standard of practice is to meet the needs. However much we may dislike compulsion, without this impetus the next forty years of accounting for price changes in company reports may well be as unfruitful as the last.

Acknowledgment

I am indebted to my colleague Boris Popoff for his constructive criticism and stimulus in the preparation of this paper.

Anatomy of a Merger

D. G. Rhys

In this paper it is proposed to analyse the circumstances and tactics surrounding a long drawn-out takeover battle which at one time or another involved most of the companies in the important British heavy commercial vehicle industry. In many ways this conflict typified the offensive and defensive tactics used in the merger movement, and it illustrates the obvious but sometimes forgotten fact that defensive tactics on the part of the firm being taken over substantially increase the price being offered to the company's shareholders. Clearly, of course, a takeover battle involving more than two firms only serves to further increase the shareholders' short term gains. Whether such a contest is to the benefit of the firm which is ultimately successful in gaining control of the 'take-overee' is of course debateable. It is such factors which make the battle for Atkinson Lorries (Holdings) so interesting.

General economic background

The first requirement is to survey the broad industrial and market background to a situation where so many heavy vehicle builders wished to absorb Atkinson into their own organisations. This section of the motor industry contains a number of important firms which are independent of the giant groupings. In 1970 five such firms existed, Foden, ERF, Seddon, Dennis, and Atkinson, all of which tended to compete vigorously with each other and with the Truck and Coach Division of British Leyland. British Leyland's stake in the heavy vehicle sector was the responsibility of the old Leyland Motors companies, and of the Jaguar group companies Daimler and Guy. Taking the commercial vehicle market as a whole the independent firms account for less than 5 per cent of total sales, but in the market for vehicles over 16 tons gross weight the independents account for over 35 per cent of sales compared with 60 per cent by British Leyland. As this is a growing market in both proportionate and absolute terms, the small independent producers have

been able to prosper and have been able to retain a high share of the total market.¹

A number of factors have accounted for the relatively high market penetration of the small firms and for their relatively sound financial position. In the first instance the small firms produce custom-built high quality vehicles by using labour intensive production methods. As the total production of such vehicles in 1970 was around 40,000 units and as each vehicle incorporates many custom features – the whole being meticulously assembled – neither the size of the market nor the nature of the product are conducive to large-scale production methods. As a result the mass producers of commercial vehicles, Ford, Bedford, Chrysler UK, and BMC, did not deem it economic to attempt to compete with the smaller producers. Any attempt by them to introduce the same degree of custom building as the smaller firms would result in a slowing down of the whole productive process and therefore sub-optimum working of the expensive capital equipment used by the mass producers. The mass producers have tried the alternative policy of selling more standardised heavy vehicles but so far with only a limited degree of success. It appears that the market for such vehicles demands a product which the small firm, utilising the minimum amount of fixed equipment, finds it the most economic and profitable to produce.

Since 1945 the typical market condition for heavy vehicles has been one of excess demand. As a result, short-time working and redundancy have been infrequent in the heavy vehicle plants, and that which has occurred has often been caused by some firms making questionable commercial decisions rather than by any weakening in aggregate demand. A by-product of this has been harmonious labour relations born out of security of employment. The strength in demand

¹ See a forthcoming paper 'Heavy Commercial Vehicles: the Survival of the Small Firm', *Journal of Industrial Economics*, Summer 1972, by the author.

for heavy vehicles, both at home and abroad, is illustrated by the growth in the productive capacity of the heavy vehicle producers:

TABLE 1

	1960	1968	1971
Foden	1,000	1,600	2,000
ERF	650	1,500	2,000
Atkinson	800	1,196	1,800
Seddon	900	2,000	3,000
Leyland	22,000	24,000	27,000

As the heavy vehicle sector has been typically one where a seller's market prevailed, it was to be expected that one characteristic of the firms in the industry would be that of a sound financial position. In the event this indeed has largely been the case, and the profitability record of the heavy vehicle sector contrasts strongly with that of the car industry between 1960 and 1970, as shown in Table 2.

Despite some fluctuations it is clear that the period 1960-70 was one of financial progress and prosperity for most of the heavy-vehicle producers. Indeed, the performance of the firms involved in the period 1965 to 1970 is in sharp contrast to the position facing the car industry as a whole, where apart from the Ford Motor Company the car manufacturers often did little better than break-even, and often made losses. In short, the squeeze on consumer durables and the slow economic growth rate which greatly affected the car market left the heavy vehicle market virtually unscathed. The only loss-maker on the commercial vehicle side was Dennis whose problem was one of relatively capital intensive methods of production allied to a poor market penetration, which in turn was a function of marketing errors.

So given the state of the market the quickest way for any one producer to increase capacity would be for it to absorb one of its rivals. If the resulting merger gave rise to economies then the total output of the whole would be greater than combined output of the

individual parts. This then was the broad background to the bids variously made by ERF, Foden, and Seddon, for Atkinson.

Financial aspects of the bid

ERF (Holdings) made the initial bid for Atkinson in July and August 1970. Fodens joined the auction only to withdraw from the scene in September 1970, ERF also withdrew at one stage but finally in October 1970 had its *fifth* set of terms accepted by the Atkinson board. At this stage ERF appeared to have succeeded in its aim of absorbing its rival, only to be thwarted by a last minute intervention by Seddon Diesel which by December 1970 had clearly succeeded. Throughout the battle, British Leyland, which held substantial minority holdings of 20 per cent and 27 per cent in the equity of both Atkinson and Foden, remained passive, merely indicating its readiness to sell to the highest bidder.²

Chronologically the bare bones of the takeover strategy and tactics of the combatants was as follows:

Bid	Terms	Value per Share
ERF's first bid	One ERF ordinary for every three Atkinson	7/6
ERF's second bid	Three ERF ordinary for every seven Atkinson	9/2½
Foden's first bid	Two Foden ordinary for every nine Atkinson	9/10
ERF's third bid	One ERF ordinary for every two Atkinson	11/4½
ERF's fourth bid	One ERF ordinary plus 1/- cash for every two Atkinson	11/6

After the Atkinson board had accepted ERF's fourth offer, Foden withdrew from the battle without making a fresh offer.

² In September 1971 BLMC divested itself of its holdings, but obviously during the takeover battle they were a force to be reckoned with.

TABLE 2

Index of Profits (Pre-Tax)

	Foden	ERF	Seddon	Atkinson	Dennis	Mass Producers of cars
1960	100	100	100	100	100	100
1961	116	121	141	149	98	57
1962	142	135	48	170	145	38
1963	103	103	94	161	113	73
1964	152	139	120	261	50	87
1965	109	146	175	294	(-65)	81
1966	178	179	351	465	67	50
1967	186	186	436	405	129	12
1970	321	381	300	511	(-30)	9

ERF's fifth bid	21 ERF ordinary for every 40 Atkinson, the cash element being removed.	11/5
Seddon's first bid	One Seddon ordinary and 15/- nominal of 8½% convertible loan stock for every two Atkinson 2/- ordinary shares.	13/0

The battle was marked by a high degree of volatility in the share prices of the bidding company, so much so that by the time a revised offer was made its financial value per share was sometimes little more than the original valuation of the previous bid. This meant that many shareholders in this long drawn-out battle found it extremely difficult to keep abreast of the exact price they were being offered, for normally the value of a bid *was* eroded by fluctuating share values.

<i>Bid</i>	<i>Value at the time it was made</i>	<i>Value at the time of next bid</i>
ERF's first	7/6	7/4
ERF's second	9/2½	9/2
Foden's first	9/10	10/0
ERF's third	11/4½	10/3
ERF's fourth	11/6	10/10½
ERF's fifth	11/5	11/0
Seddon's first	13/0	<i>Value at Final Acceptance</i> 12/9

Nevertheless, the shareholders of Atkinson were offered considerably better terms in the final bid than was originally contemplated. This illustrates two things: (i) the advantages to shareholders from a contested bid and (ii) that many boards, by being party to an *agreed* bid or merger, may fail to look after the shareholder's interests.

Description of the bid

The initial offer made by ERF was not really a serious bid; the offer price, which fluctuated between 7/6 and 7/2 was considerably less than the current market valuation of 8/1½ per Atkinson share. The original offer document concentrated on both the 'industrial logic' of the bid and on a critical comparison between ERF's past performance and that of Atkinson. ERF made no profit forecast and was clearly more intent on making an exploratory thrust in order to test Atkinson's defences, than on putting forward a bid which would be immediately acceptable.

The first bid made in July 1970 was duly rejected by Atkinson but was followed by a fresh and more serious approach by ERF in August. This was countered within the same week by Foden's entry into the arena.

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The board of Atkinson rejected both bids and ERF allowed its offer to lapse, although the latter did not rule out the possibility of another bid when Foden's bid expired. So, after starting the bidding and then retiring, ERF returned to the battle with a third set of terms. This was quickly followed by a fourth bid which for the first and only time introduced a cash element into the proceedings. On receipt of this offer for the first time the Atkinson board gave its support to a bid for the company; furthermore, the new terms removed Foden from the scene when the company announced that its own offer had lapsed. However, following a split in the Atkinson board, it was announced that Foden had made a fresh approach to Atkinson, but nothing came of this in the form of a new or improved offer. Evidently a failure on the part of the Atkinson and Foden boards to agree on terms, meant that Foden was not prepared to improve upon the then latest ERF bid, and it finally opted out of the contest. Following a revised profits forecast by Atkinson, ERF put forward its fifth and final set of terms which reverted to a straight share exchange with no cash element. Although Seddon Diesel had previously indicated a lack of interest, on the grounds that the price now needed to gain control of Atkinson was becoming rather high, at the moment of ERF's apparent triumph Seddon entered the fray with its first and only bid. On studying the terms offered, the Atkinson board switched its allegiance and recommended acceptance. In the board's view the economic and industrial grounds for a merger with either ERF or Seddon were equally compelling, but on purely financial grounds they now favoured the latter concern's offer.

In the event with the lapse of ERF's fifth set of terms victory in the lengthy auction for Atkinson had gone to Seddon Diesel. ERF had opened the bidding in July 1970 to be joined by Foden in August. Initially ERF allowed its bid to lapse and withdrew from the contest. However, the company re-entered the picture and it was Foden's turn to withdraw from the scene in September. In October ERF had its fifth set of terms accepted by the Atkinson board only to be thwarted by Seddon's appearance in the auction room. In November ERF finally withdrew from the contest and by December 1970, 67.5 per cent of the ordinary and 74.8 per cent of the preference shares had accepted Seddon's offer, at which stage Seddon's offer became unconditional and the battle was over.

Analysis of tactics

Offensive and defensive tactics were based on a thoughtful analysis of the economic and industrial advantages or disadvantages presented by a merger; on an assessment of the financial inducements to be

offered at any one time; on the precise timing of a bid; and last but not least, on the nature of the personalities involved.

It was clear that in the period between ERF's first tentative approaches to Atkinson and the occasion of its first official offer, ERF was giving itself the maximum amount of room for manoeuvre. ERF's announcement of its preliminary profit figures for the year 1969 of £735,000 made no profits forecast and made no mention of the current trading position. This meant that any part of Atkinson's defences which required the company to speculate on its own profits forecast would not have the benefit of the bidder's figures to give it a reference point. ERF's tactics of keeping the biddees guessing was followed by an unrealistic offer which was primarily aimed at making the 'victim' reveal his defences. In a contested takeover the defence forecasts are always controversial and the opportunity is given to the bidder to cast doubt on the victim's estimates. In other words, it is the bidder's aim to place the biddee in a defensive posture from the start, thereby giving the bidder tactical leadership. ERF's offer document made no profit forecast but fired an offensive shot by stating that current trading was 'buoyant' with a substantial and precise expected increase in turnover of 15 per cent. As mentioned before the document concentrated on the industrial logic of the bid and a critical comparison between ERF's past performance with that of Atkinson's. On the surface the industrial logic was sound as both firms sold very similar vehicle ranges and often supplied the same customers. A high proportion of 'bought out' components – around 80 per cent – were used, so combined buying power may have produced better terms. Overseas both companies had assembly plants in their two main markets – South Africa and Australia – where the companies suffered from limited market penetration and relatively high operating costs, so an opportunity to rationalise presented itself. The financial attack centred on profits as a percentage of capital employed³ with ERF publicising its typical performance as being around 23 per cent compared with 19.9 per cent for Atkinson. Much was made of the 'incremental' return, i.e. the figure for 1969 which was 34.9 per cent compared with 14.9 per cent, although this could be explained by the cost, and disruption to production, caused by Atkinson's expansion programme.

Atkinson rejected the bid, but none too speedily. This fact given the obvious unreality of ERF's offer could only be interpreted as a sign of weakness and/or that defences were taking a long time to build. In contrast to Atkinson's lethargy, ERF immediately

countered the rejection with an improved offer. However, it was still clear that ERF's bid left the company further room for manoeuvre. In other words, as it was almost certain that other bidders would appear on the scene ERF was still retaining the initiative by tempting them to show their hands whilst still retaining counter-measures of its own. In the event Foden appeared on the scene to counter ERF's second bid.

This opened up fresh possibilities as British Leyland held substantial minority holdings in both Foden and Atkinson. Owning 20 per cent of Atkinson's equity and 25 per cent of Foden's, British Leyland was in a position to bring the two firms together. As the ownership of the remainder of Atkinson's equity was rather diffuse, acceptance of Foden's offer on the part of British Leyland could easily have settled the issue at an early stage. However, British Leyland remained passive, waiting upon the Atkinson board's decision.

Atkinson's rejection of Foden's offer was backed by a promised one for three bonus scrip-issue, a forecast of an increased dividend, and the repeated forecast of an increase in profits of £346,000 to £750,000. ERF's bid was rejected mainly on financial grounds concerning the value of the offer, but where Foden was concerned, although rejection was basically on grounds of the adequacy of the bid, it was reinforced by observations to the effect that the two organisations, because of the specialised nature of their products, were incompatible. Atkinson accepting the 'industrial logic' of ERF's bid found no such compatibility where Foden was concerned. Indeed it did appear that Foden could only back the financial aspects of its bid by a statement to the effect that size *of itself* would produce a stronger group. However, as Foden was mainly a manufacturer whereas ERF was basically an assembler it would appear that significant long-term gains could only be recouped at the expense of costly short-term reorganisation.

ERF retired from the fray completely only to return with a third revised offer. Again the Atkinson board appeared to have had good financial grounds for its rejection of the bid, and financial opinion urged shareholders to wait in the expectation of a revised offer. The Atkinson board was illustrating quite clearly that it did not want to be taken over and felt quite capable of remaining independent. Under these conditions any eventual submission would only be to the highest bidder, when the price offered just could not be refused.

However, a further ERF bid containing a cash offer won Atkinson's approval. As Foden had allowed its offer to lapse it appeared that no rival bids were forthcoming and anyway the price now seemed right.

³ Defined as equity plus long-term loan capital.

Immediately the situation was clouded by a publicised split in the Atkinson board which appeared to arouse fresh interest on the part of Foden. However, although Foden's approach had been more tactful than ERF's rather brash attitude, and although the Atkinson board, despite its acceptance of ERF's offer, had expressed readiness to consider any fresh approach from Foden, the lack of enthusiasm on the part of Atkinson's board for a link with Foden would suggest that the latter would have had to offer substantial short-term financial inducements to offset the long-term reservations concerning compatibility, and it was unlikely that Foden would be prepared to pay a price which was beyond that which could be justified by commercial predictions concerning the profitability of the joint enterprise. At this stage in the auction some of the institutional holders in Atkinson, in the absence of a lead from British Leyland, had taken their profits by selling in the market.

At this point in the proceedings although still wishing to remain independent Atkinson realised that its chances of doing so were slim. However, the company began to look afresh at its profits forecast made as an early defensive reply to ERF's first offer. The bidder agreed to delay posting its latest offer until the new study was completed. A new estimate of £825,000 was produced which compared with the original £750,000 and ERF took note of this by increasing its offer. This new set of terms received the unanimous support of Atkinson's board which was convinced that the price per share was above that which the shares would command in the absence of any bid.

When all seemed settled Seddon Diesel made its single but successful bid. Its main arguments were based on the 'industrial logic' of its bid, bearing in mind the marketing economies which would arise from the integration of the two firms' distribution networks. Savings could also be made by the use of common components with Seddon making parts for Atkinson and reducing the latter's dependence on outside suppliers. One possible factor which Seddon omitted to mention was the possibility that its own market was about to suffer a setback. The Labour Government had proposed a Bill to restrict to one-hundred miles (as the crow flies) journeys made by lorries weighing over 16 tons gross. With a large part of its production devoted to vehicles of 16 tons and under, the future looked rosy for Seddon, but for Atkinson, principally a heavy lorry maker, the future was not so clear. However, the Conservative administration deleted this proposal and the market began to turn back in favour of really heavy lorries.

The six-month long battle ended when Atkinson's board switched its support from ERF to Seddon, on the grounds that although a good case could be made

on industrial and economic grounds for a merger with either company they favoured the Seddon offer on financial grounds. British Leyland showed its hand for the first time and accepted Seddon's offer for its 19.8 per cent stake in Atkinson.

Although Seddon paid a high price, the sharply higher profits Atkinson was always confident of achieving did in fact materialise. Over the six months ending 30 September 1970 the company made £459,000 pre-tax compared with £183,000 for the corresponding period a year earlier. Atkinson's target of at least £825,000 from the year's trading was almost achieved with £783,000 being earned, a figure which was nearly double the previous year's £404,000. Therefore Seddon by waiting until the last moment delivered a psychological blow to ERF, at a time when the latter was relaxing under the impression that its bid had succeeded, and was able to purchase a company whose profits potentiality should be in keeping with the price paid for it by the purchaser.⁴

Although tactics were partly based on financial and economic logic, psychological and subjective factors were also relevant. The Atkinson board wished to retain its independence and to retain a free hand in operating an independent commercial enterprise. The 'top executives' of the independent commercial vehicle makers are drawn from families with traditional links with the particular firms involved, often families who were party to establishing the concerns involved. Each firm's family group is jealous of its own domain and highly competitive with, and even antagonistic towards the family groups of rival firms. There is more than a touch of the 'Zaibatsu' about the independent commercial vehicle industry, and one firm being absorbed by another is almost synonymous with one feudal family having his castle and lands appropriated by another. Personal antagonism or family incompatibility, was a real factor in this take-over battle.

This particular battle was important in that at one time or another it included almost all the main enterprises in the heavy vehicle field, including British Leyland. Only the Dennis concern was not a participant, and this firm has been, and still is, a possible take-over candidate itself.

Assessment of the success of the merger

The firms in the heavy commercial vehicle field are typically small-scale producers utilising custom building techniques. This 'non-specialisation' is the basis of the independent firms' existence; in other words they fulfil a need which mass producers are not

⁴ However, see below on page 52.

geared-up to meeting. Any attempt to standardise output would perhaps reduce costs a little, but the customer would be as likely to transfer his business to firms which make standardisation their speciality. Perhaps, therefore, any standardisation brought about by merger would result in the firm or combine losing its sales to the low cost mass producers. The traditional fate of small commercial vehicle firms attempting to compete directly with the mass producers has been for them to lose their independence; firms such as Guy Motors became bankrupt, and others such as Thornycroft left the industry. In short, the volume of output achieved by the mass producers and their methods of production are such that they are able to make standardised products more efficiently than small-scale specialists. On the other hand, because they are geared-up to producing large volumes, any attempt on the part of the mass producers to make non-standardised vehicles would mean uneconomic production caused by the under-utilisation of capacity, which in turn stems from the slowing down or halting of the productive process in order to introduce custom-built features.

Clearly, any merger proposal within the heavy vehicle sector mooted on the grounds of securing greater economies through standardisation may be based on false assumptions. The economies secured by the production of 5,000 standardised units would be far less than those derived from producing 50,000. Hence standardisation in the heavy vehicle sector would play into the hands of the mass producers. Nevertheless, if standardisation of production occurred between two specialists each capable of producing around 2,000 to 3,000 vehicles a year, what cost savings could be expected?

Cost reductions are limited by two factors. Firstly, the typical specialist 'buys out' items accounting for 80-90 per cent of total ex-works costs, so few costs are internal. Secondly, an increase in volume from 2,000 units a year to 5,000 will not make much difference to unit costs. So if a firm like Atkinson is linked up with another assembler like ERF, or Seddon, or a manufacturer like Foden, this is unlikely to have much effect on the efficiency of the combine. A number of examples can be put forward to illustrate this point.

For example, where cab production is concerned it is not economic to use pressed steel construction methods at production rates of below 20,000 to 22,000 a year. In addition, the optimum production levels of the most efficient process for production levels below 20,000 - glass fibre open mould techniques - have optimum levels of between 350 and 500 units a year. This means that duplicating the production process by using forty separate moulds, with all the allied labour and material costs, would still mean unit pro-

duction costs below those incurred by using pressed steel. So from output levels of from 500 units a year to 20,000, no cost reductions are likely, one merely duplicates an existing process, and therefore a merger between Atkinson and any other independent would not give an output volume which justified the use of techniques markedly different to those already used by the firms involved. Again, the optimum capacity for a single car-engine automatic transfer line exceeds one million units a year, as a result even Bedford with an annual truck output of over 70,000 does not find it economic to use the latest high-speed equipment for major component production. Leyland Motors produces around 25,000 to 30,000 heavy vehicles, yet still finds it economic to innovate and to ingeniously build up their own production equipment for high-powered diesel engines. This equipment is the most efficient for output levels of around 30,000 a year although it would be hopelessly uneconomic at rates of production in excess of 100,000 units a year. Fully integrated German heavy vehicle producers such as MAN, Henschel or Deutz using the most technically sophisticated techniques find it impossible to undercut the prices charged by British specialists, and although their output volumes exceed 10,000 units a year, their profits per chassis are generally inferior to those earned by UK specialists, mainly because they use output methods more suited to output volumes far in excess of what they actually achieve. In short, a merger between all the UK independent commercial vehicle producers would hardly justify, on economic grounds, the establishment of a different type of productive process which included facilities for engine, gearbox, and axle production. So where technical economies are concerned, there appears to be little rationale for Atkinson to merge with a firm like Seddon, ERF, or Foden. Costs will be left virtually unaffected and any attempt to over-standardise might leave customers to question the wisdom of paying a premium price for a standardised Atkinson-ERF-Seddon vehicle in preference to a similar lower-priced product from Ford-Bedford-Rootes.

Larger firms in the independent commercial vehicle sector are therefore unlikely to produce significant economic advantages. However, a few financial and risk-bearing economies may be found because a larger firm would, for instance, be able to borrow money on slightly better terms due to its greater bargaining power, and a complementary range of vehicles would lessen the effects of a slump in one section of the market. On the other hand, if the larger combine loses sales either by becoming too impersonal, or by trying to meet the more efficient mass producers on their own ground, it might find it difficult to find someone willing to risk lending it funds. In the event

a merger justified on the grounds of cost reduction could quite easily be shown to be mistaken. In the event, although unitary growth might produce a greater cash flow, the addition of one independent firm to another is unlikely to more than double the overall financial return. In other words, profits per chassis would be unchanged as the room for economies is so limited. Indeed, any attempt to achieve cost reduction, say through greater standardisation which results in having a smaller design staff, could produce adverse effects which reduce unit revenue more than any saving in unit costs.

Another factor which this whole episode highlights is the gross optimism of profits forecasts used to support the value of a bidder's offer. As a case in point, at the height of the battle Foden was forecasting profits for the 1970/71 financial year of £1,500,000; in fact, they fell short by £200,000. This almost coincided with the company's introduction of short-time working in August 1971. This illustrates the point that shareholders must always be wary; but too often they are only too prepared to accept what the board tells them. The last time when shareholders took the initiative in the British motor industry, in order to safeguard or even save a company from disaster, was at Leylands in the early 1920s when a shareholders' association reorganised the near bankrupt company. Often shareholders have done badly out of mergers, and sometimes they can be reprimanded for being too easily led and too willing to believe what contestants tell them. Where the 'small man' is concerned this is perhaps not surprising, but even the big institutions are not free of this criticism.

Conclusion

In many instances one is forced to admit that a merger is an alternative to a management consultancy exercise, the bidder simply wishes to make what it claims is more efficient use of the biddee's resources. However, this is far less than is claimed for most mergers; usually a merger is seen as a forerunner to achieving significant scale economies. It is rarely stated that scale economies are only reaped in the long term, whereas all that can be expected in the short run is the optimal use of existing resources. In other words, there

is often confusion between the cost savings stemming from the law of variable proportions and those stemming from economies of scale, the latter being a long-run phenomenon but the former a short-term one. In the case of Seddon-Atkinson it is problematical whether any *significant* cost reductions will be achieved. What of the immediate financial results of the merger? It transpired that, like Foden, neither Seddon nor Atkinson reached the profit levels forecast at the time of one of Britain's longest takeover fights. The profits made by the original Seddon company (i.e. Seddon less Atkinson) for the year ending 30 June 1971 of £839,000 were some £141,000 less than the figure used to back Seddon's case at the time of its bid. This was certainly due to a slight recession in the medium-heavy truck market but Seddon has weathered this so well that one gets the impression that Seddon's profits forecast was over-optimistic *per se*. Atkinson's final estimate of £825,000 fell short by £42,000 mainly because of losses sustained by overseas subsidiaries. Again as these foreign activities had a long history of trouble should Atkinson have discounted the possibility of continuing losses quite so readily? All this merely amplifies what was said earlier, that shareholders should carefully analyse the claims of contestants in a takeover battle even if it means hiring their own financial advisers. In this particular instance the biddee's target was closer to realisation than the bidder's, but only time will tell whether Seddon paid too much for Atkinson. After all, the latter's actual profits were little more than justified the terms of ERF's *fourth* bid. However, as the losses made by Atkinson's overseas subsidiaries have been terminated, and as economic growth increases the demand for the products of Atkinson and Seddon, profits could return to levels which justified the terms of the merger: furthermore the profits actually earned were a record for both firms. *Nevertheless, this does not rule out the possibility that if each firm had remained as an independent entity their performance would have been even better.* Generalising, this whole episode simply illustrates that many of the reasons put forward for a merger are either based on wishful thinking, or at best not on the factors that are put forward as the 'logic' behind a merger or takeover battle.

Input-Output analysis as an aid to financial control

R. W. Bayliss

In looking at the problems of controlling the funds flow of a large group of companies a major factor is putting the system into some form which enables a consistent analysis to be made. There has been a growing interest in Leontieff Input-Output Model Building as a tool for micro-economic analysis of corporate activity. Farag,¹ Livingstone,² Ijiri³ and Richards⁴ show different aspects of the Input-Output technique with its possible applications and Gambling and Nour⁵ show the difference between the econometric approach of the Input-Output table to that of the traditional accounting concepts of standard costing. Richards in his paper took data from Moody's for the years 1951-57 and attempted to use this to analyse the whole enterprise for four key variables - current assets, fixed assets, all equity accounts and a balance account. Farag extended the basic concept of Richards' model to a departmentalised form, but only used experimental data as an illustration. In both of their papers Ijiri and Livingstone consider single product processes in their models and again base the illustrations on hypothetical data. Brech⁶ describes how the technique was applied to an international organisation as an aid to analysing comparative cost structures. The aim of this paper is to show in a practical way how the model can be used as a further aid to management

decision making. Once built an Input-Output table can be used to determine the effects of changes in the group's operational activities. It provides a price structure and market analysis at a glance; what would happen, for example, if wage rates rise by 7 per cent and material costs by 4 per cent? How would this affect the different companies in the group and what price increases are necessary to maintain current profitability? It is questions such as these that the Input-Output model can help to answer.

I will describe the attempts made to build a sequence of open Leontieff Input-Output models for a group of British companies and the results obtained from them. The data presented below is based on the actual audited accounts and sales analysis of the different companies of the group, it has been changed in detail to conceal their identities.

Certain data is held at head office, but for the building of the models it was necessary to extract figures from each of the individual companies. Due to the different methods of accounting carried out in the various companies, certain figures had to be prepared so as to be suitable for inclusion in the Table. In general, however, it was possible to use data already available without any changes being made.

To aid understanding of the Input-Output technique there follows a brief description of the companies in the group. It has a decentralised organisational structure and consists of four main divisions which comprise seven separate manufacturing companies. There is a substantial amount of inter-group trading between companies and in addition a small service organisation provides maintenance and plant renovation facilities within the group. Certain essential services including computer services, the raising of finance and executive staff recruitment are provided by a small head office. This also formulates long-term planning policy about the direction of future activities and group expansion, but day-to-day control and decision making is left with the divisions themselves.

¹ S. M. Farag, 'A Planning Model for the Divisionalised Enterprise', *The Accounting Review*, April 1968, pp. 312-20.

² J. L. Livingstone, 'Input-Output Analysis for Cost Accounting, Planning and Control', *The Accounting Review*, Vol. 44, No. 1, January 1969, pp. 48-64.

³ Y. Ijiri, 'An Application of Input-Output Analysis to some Problems of Cost Accounting', *Management Accounting*, April 1968, pp. 49-61.

⁴ A. B. Richards, 'Input-Output Accounting for Business', *The Accounting Review*, July 1960, pp. 429-37.

⁵ T. E. Gambling and A. Nour, 'A Note on Input-Output Analysis: Its Uses in Macro-Economics and Micro-Economics', *The Accounting Review*, Vol. 45, No. 1, January 1970.

⁶ R. Brech, 'Input-Output Analysis in a large Commercial Organisation', paper given at the NATO Conference on Operational Research in Economics on 21 May 1963, in Palermo.

Using a series of these operating statements, one for each manufacturing division, it is possible to build up the basic data for the first half of the Input-Output Table, the completed data giving the Input-Output Table. The completed data giving the Input side to the Table is shown below.

The top section consists solely of the inter-group transactions. These are the value of Outputs, whether finished or semi-manufactured, made by one company and sold to another. Note in particular company E, this is the small service organisation which sells its 'services' to other divisions in the group. The large purchases from companies A, B, C (see column D) are the values of exchange and replacement goods bought by the retail marketing organisation in the group. Head office (company F) sells its administrative and support services to the other members of the group.

The second half of the Input-Output Table concerns the Outputs or who gets the goods produced. If division B is again considered for the same period

⁷ A. R. G. Heesterma, *Forecasting Models for National Economic Planning*, D. Reidel Publishing Company, 1969.

Purchases from division A	2·12
Purchases from division C	3·41
Purchases from division E	1·09
Purchases from division F	1·80
<i>Total inter group purchases</i>	<u>8·42</u>
Direct materials	14·40
Labour	18·92
Fuel – power	1·62
Repairs and maintenance	1·70
Administration	1·97
Selling and distribution	3·42
Depreciation	1·05
Profit/loss	2·09
<i>Total direct</i>	<u>45·17</u>
<i>Total direct + inter group</i>	<u>53·59</u>

Outputs		A	B	C	D	E	
Inputs							
Manufacturing	A		2.12		14.22		
	B	9.00			18.31		
	C	7.50	3.41		9.31		
	D						
Service	E	1.40	1.09	2.97			
Head Office	F	2.00	1.80	2.31	4.44	0.12	
Direct materials		10.62	14.40	8.31		2.51	
Labour		22.31	18.92	15.42		1.32	
Fuel		1.40	1.62	3.41	0.82	0.30	0.12
Repairs		4.04	1.70	1.10		0.21	0.12
Administration		3.50	1.97	4.42	3.73	0.12	9.89
Selling		2.10	3.42	1.92	8.22		
Depreciation		1.85	1.05			0.21	0.54
Profit		4.45	2.09	3.33	5.55	0.69	
Total		70.17	53.59	43.19	64.60	5.46	10.67

as the operating statement shown above, its flow of goods was as follows:

Flow of Outputs for Company B (all figures in millions of \$)

Company B:

A	BC	D	EF	1	2	3	4	5	6
9.00	18.31		5.12	3.53	4.42	8.78	3.97	0.46	
Total: 53.59									

The group has five principal markets (1-5) and 6 represents the stock formation or inventory change, which can be either positive or negative. This breakdown of sales goes well beyond that given in the analysis of Farag or Livingstone. Farag considers only total sales and inventory change while Livingstone suggests that it is possible to expand the sales total into different categories as indeed has been done with the above. If the output flow of each division is built up in the same way as for B above then the second part of the Input-Output Table can be constructed and in Table 2 the completed Input-Output Table can be seen.

The first thing which becomes apparent here is that sales of goods by destination plus inventory change equals Inputs by origin. To facilitate reference, the Table of data is usually partitioned to four sections and these can be symbolically represented as:

A	B
C	D

	A	B	C	D	E	F
A	1.00	-0.041		-0.220		
B	-0.128	1.00		-0.283		
C	-0.107	-0.066	1.00	-0.144		
D				1.00		
E	-0.020	-0.022	-0.069		1.00	
F	-0.029		-0.053	-0.068	-0.022	1.00

The inverse of which $(I-A^*)^{-1}$ is shown as the top left hand table of co-efficients in Table 4. This consists only of positive elements and has certain non zero elements where there were previously none (col B and D). They represent the cumulative Input-Output flows within the group. Using this we can easily complete the rest of the Table $(I-A^*)^{-1} B^*$ and $C^* (I-A^*)^{-1}$ by simple matrix multiplication.⁹ The element a_{ij} of $(I-A^*)^{-1}$ is the total production of division i per unit of final demand of division j . The element b_{ij} of $(I-A^*)^{-1} B^*$ is the total production of division i per unit of final demand in market j . The element c_{ij} of $C^* (I-A^*)^{-1}$ is the requirement of input i per unit of final demand of division j . The element d_{ij} of $C^* (I-A^*)^{-1} B^*$ is the requirement of input i per unit of final demand in market j .

Where A =the inter-group transaction, if there are n divisions A will have order $n \times n$.

Where B =sales to different markets, if there are m markets B will have the order $n \times m$.

Where C =direct inputs of companies, if there are p inputs C will have the order $p \times n$.

It can be seen from Table 2 that D is empty. It is possible for entries to occur, for example, where the group has a technical know-how agreement and provides personnel on site at customer's factories, but it is usually empty. It is now possible to begin the solution of the Input-Output model, which will allow the group to relate the effects of demands for output from outside customers and within the group itself on the Inputs needed to satisfy the demands for production made. The first stage is to derive the simple Input-Output co-efficients. This is achieved by dividing either the column or row totals into each element of the corresponding column or row.⁸ The Table now becomes as shown in Table 3.

We will call these

A*	B*
C*	D*

Note that D^* is again empty.

It is now desired to solve the data in Table 3 to give the traditional cumulative Input-Output co-efficients of the Leontieff Input-Output Model. The inter group transactions matrix becomes $(I-A^*)$, where I is an identity matrix which gives us

These represent the total production per unit of final demand for each division by each market $((I-A^*)^{-1} B^*)$ and the total requirements of inputs per unit of final demand by divisions $C^* (I-A^*)^{-1}$. It is to be noted that the blank part of the table D^* is now filled with co-efficients in Table 4. These are calculated from $C^* (I-A^*)^{-1} B^*$ and are again cal-

⁸ It is usual to divide through by the column totals as the assumption about constant proportionality of Inputs is normally made. However, it is possible to divide through by the row totals where it seems more rational to consider a fixed proportionality of outputs.

⁹ Livingstone (page 62) states that these can only be obtained by a process of collapsing the matrixes into vectors and then after computation, disaggregating them again; this is, however, unnecessary.

TABLE 2

Outputs Inputs	A	B	C	D	E	F	Total		1	2	3	4	5	Stock Change	Total A-F +1-6
							A-F	F							
Manufacturing	(A	2.12		14.22			16.34	7.22	19.36	16.22	3.14	7.10	0.69	70.17	
	B	9.00		18.31			27.31	6.12	3.53	4.42	8.78	3.97	0.46	63.59	
	C	7.50	3.41		9.31		20.22	5.30	4.02	3.15	4.10	6.25	0.15	43.19	
	(D							20.10	16.20	12.10	1.00	14.10	2.00	64.60	
Service	E	1.40	1.09	2.97			5.46							6.46	
Head Office	F	2.00	1.80	2.31	0.12		10.67							10.67	
Total	A-F	19.90	8.42	5.28	46.28	0.12	80.00	37.74	43.11	36.89	16.02	31.42	3.30		
Direct materials Labour Fuel/power Repairs and maintenance Administration Selling and distribution Depreciation Profit	G	10.62	14.40	8.31		2.51	35.84							35.84	
	H	22.31	18.92	15.42		1.32	57.97							57.97	
	I	1.40	1.62	3.41	0.82	0.30	0.12	7.67						7.67	
	J	4.04	1.70	1.10		0.21	0.12	7.17						7.17	
	K	3.50	1.97	4.42	3.73	0.12	9.89	23.63						23.63	
	L	2.10	3.42	1.92	8.22			15.66						15.66	
	M	1.85	1.05			0.21	0.54	3.65						3.65	
	N	4.45	2.09	3.33	5.55	0.69		16.11						16.11	
Total	G-N	50.27	45.17	37.91	18.32	5.34	10.67	167.70							
Total	A-N	70.17	53.59	43.19	64.60	5.46	10.67	247.70	37.74	43.11	36.89	16.02	31.42	3.30	

TABLE 3

[illegible]

markets and can additionally create a market 'balance sheet'. If we consider Table 3, market 2 (column 2, entries G-N) then the total sales to that market of \$43.11 million for 1969 required the following inputs from the group; \$9.09 millions of Direct Materials (43.11×0.211), \$15.39 millions of labour (43.11×0.357), etc. The Sales to that market produced profits to the group of \$4.05 millions (43.11×0.094). Such an analysis can be extremely useful for analysing market trends, and the information is readily available from the Input-Output table.

It is obvious that the top right hand matrix gives the cumulative impact of market demands for divisional outputs and the bottom right hand matrix for inputs. The four divisions in the example, are of course by inference, single product manufacturers, but it is a simple task to extend the Input-Output table to include more than one product. A table has been constructed giving a breakdown into 11 product streams in three divisions. This extension was suggested by the group head office itself who have indicated certain areas of analysis which they hope the more detailed model will help them to carry out.

One of the main criticisms of Leontief Input-Output analysis is that the model is too rigid. It consists only of linear equations, and this implies a fixed proportionality of Inputs (or Output, see above). For this reason stress has been laid on the phrase 'at present levels of activities', as the idea that any level of Output and the corresponding Inputs can be determined from the model is entirely wrong. Another major criticism, that of the model being static, is an inheritance from the application of this type of model to macro-economic situations. In these cases the collection of data is an enormous task, but the tables and the model derived above contain data which is, or should be readily available. One problem which worries econometricians who build and study national Input-Output tables is the stability of the co-efficients.¹¹ This is the way that co-efficients tend to change with time. A comparison of the tables of the group prepared for two consecutive years shows that changes are very marginal except where a major disturbance has occurred in one of the companies (from a fire or prolonged strike). Here the changes are predictable, the effects being readily quantified and analysed. Using the Input-Output table the effects on other companies in the division and the overall impact on the organisation can be studied. For the group under study, operating statements and market breakdown are prepared routinely on a four-weekly basis. This

leads to the idea of using the Input co-efficients themselves as controls on performance. It can be appreciated that the four-weekly periods are too short to measure significant changes in the performance of any co-efficient or set of co-efficients. The co-efficients are therefore, 'smoothed' using exponential smoothing, the results of which are shown below.

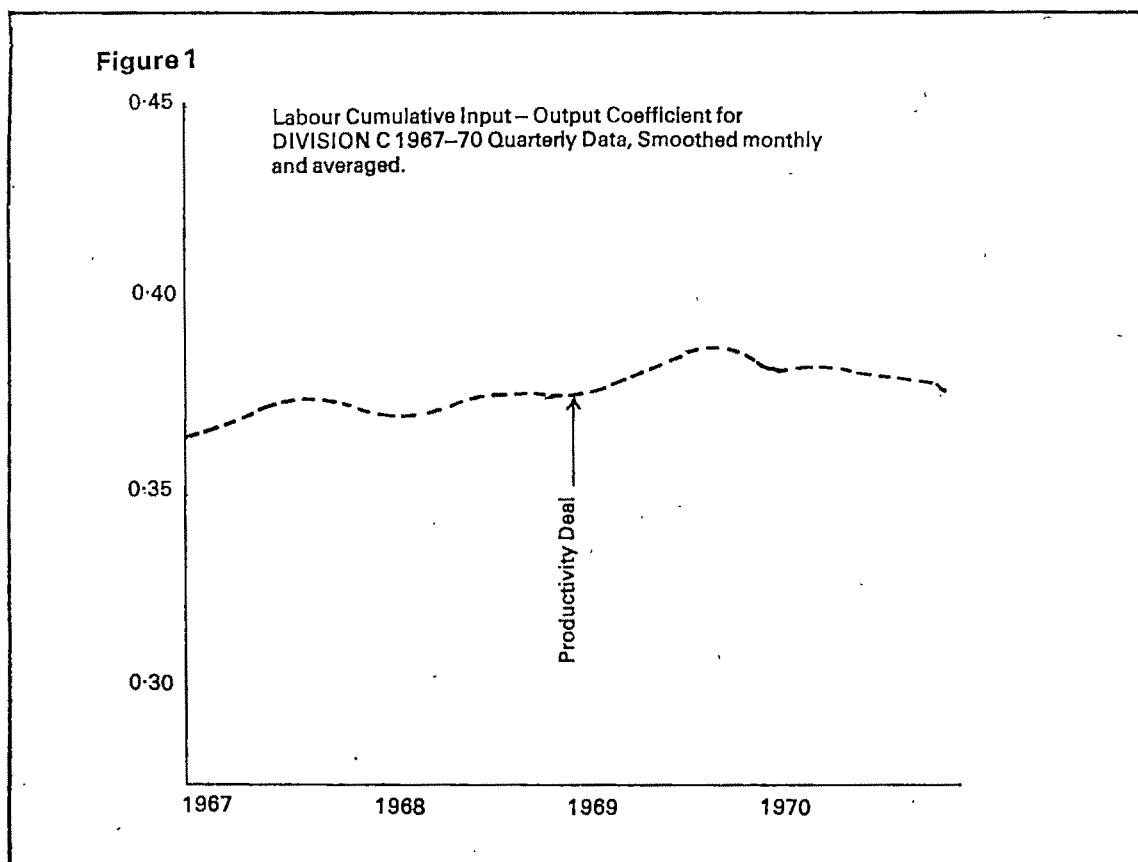
Figure 1 shows the movement of the labour cumulative Input-Output co-efficient for the four year period 1967-70. The upward drift in its value is easily seen, together with the jump for the first nine months of 1969 following the implementation of a productivity agreement. Far from making the division more productive it led to some deterioration in the position; even at the end of 1970 the situation had not improved to pre-1969, although a price increase had also occurred during 1970. Although division C is not as labour intensive as A and B (0.385 compared with 0.415 and 0.418, see Table 3 row H) it has suffered from the intense shortage of skilled labour in its area. The productivity agreement appears to have been a bad one from the division's point of view. It is just as easy to monitor any of the other co-efficients: administration, selling and distribution, etc. Once the basic table has been completed, solution and up-dating of the model is a relatively simple task.

It seems fair to conclude that Leontieff Input-Output analysis does seem to have some promise as an aid to corporate control. It provides a further tool by which information can be obtained to enable important decisions to be taken. The idea is for it to supplement existing methods of analysis rather than to be an end in itself. It can be argued that information imparted in the Input-Output model can be obtained from other sources, this is of course true. Where the Input-Output model is unique is that it provides a complete information system at a glance. Once its mechanism is understood and its limitations taken into account, then it can be a very useful addition to the management tools available. The information imparted can provide insight into what is often a subjective area of company activity, particularly in the marketing areas.

Further work is being directed into using different versions of the model as a tool for medium-term planning. Particular emphasis is being concentrated on making the model flexible to account for changes in plan targets. As more data becomes available for each of the Input variables, additional work will be put into developing the use of the Input-Output co-efficients as controls on Divisional performance. In conclusion, therefore, it seems as if there is some justification for using Leontieff Input-Output tables as an aid to management. It can be used to give very rapid answers to some of the questions which are

¹¹ A. J. Middlehoek, 'Tests of the Marginal Stability of Input-Output Coefficients', Proceedings of the Fourth International Conference on Input-Output Techniques, Carter and Brody (eds.), 1969, North Holland Publishing Co.

liable to arise in the head office of a large group of companies. By utilising existing information the cost of building the tables is minimal and the computation required to solve them well within the capacity of most computer time-sharing systems.



A Systems Approach to the British Industrial Training Act 1964

Douglas Garbutt

Modern man lives in a complex and ever changing environment which he finds increasingly difficult to conceptualize and to control. Change and innovation offer challenges and opportunities, but they also present threats to established values, and there is a temptation to retreat from these threats by limiting our definition of the problems which we face.¹ It is the recognition that most of the models we use for analysis and evaluation are too limited in their scope, that has led to the development of the systems approach. A systems approach implies attempting to delineate the full outline of the relationships with which we are involved and identifying more clearly the problems which they raise. Although on the face of it this is nothing new, in fact the systems approach implies a revolution in thought about institutions and organisations. The approach implies a revolution in the kinds of decisions which we are likely to take because we take them in terms of the total social system in which we are involved, not merely that part of it which revolves around our own persons.

The socio-economic system

The need for a systems approach has, perhaps, become most evident in relation to the economy and society. It is difficult to find any country today which does not attempt to plan its economic activities to some extent. There are countries which boast of planning, others which admit that they plan, and yet a third group who deny that they plan, but, in fact, such countries have little hesitation in using many planning techniques.² There have been signs in recent years that the heavily centralised, mechanistic, and bureaucratic planning system in Eastern Europe has run into problems, just as has the purely *laissez faire* approach in the West. Professor Bauer has been led by this to commend the 'historic British doctrine of "muddling through"'. In a sense, this doctrine appears to be the antithesis of planning. But note that

the doctrine of "muddling through" is based on an elaborate concern for second order consequences of actions. It assumes that social systems and processes are very complex phenomena and that it is impossible to determine, in advance, exactly what results will be created by one's actions, or what difficulties will be encountered . . . (This) has a contemporary look in its sensitivity to feedback from the environment and its disposition to change tactics when the data fed back suggests that the results produced differ from those intended.³ The truth is that we are rarely fully aware of the consequences of actions which we take in a social context; and we shall continue to be ignorant until we are able to take account of the manifold interacting factors which link problems together. By the systems approach, then, we attempt to define our problems more broadly, more comprehensively and to recognise the interconnections between problems.

Systems and industrial training

A systems approach to the Industrial Training Act will enable the people involved in it to see, more clearly the true dimensions of the system and its problems. It will also enable those interested in economic and social planning to consider the specific approach adopted by the British in this Act. By creating a comprehensive system of thirty or more Industrial Training Boards, the original intention was to embrace the training of the whole working population. By giving ITBs the power to raise finance by levy and to create their own administrative structure and to use the proceeds of levy for grant and other purposes, a highly independent quasi-governmental system was created providing elements of centralisation (and, therefore, planning) and also for elements of decentralisation (and, therefore, of flexibility and 'muddling through').

The industrial training system

If we are to look at the industrial training system, as a system, we must answer certain key questions

¹ Kenneth E. Boulding, 'The Ethics of Rational Decision', *Management Science*, 12 February 1966, pp. 161-9.

² Ouléa, Firmin, Harmondsworth, *Economic Planning and Democracy*, Penguin Books, 1966, pp. 45-6.

³ R. A. Bauer, *Social Indicators*, Cambridge, Mass., Mass. Institute of Technology Press, 1967, p. 7.

which are familiar in organisation theory. These are:

- (1) What are the strategic parts of the system?
- (2) What is the nature of their mutual dependency?
- (3) What are the main processes in the system which link the parts together and facilitate their adjustment to each other?
- (4) What are the goals sought by the system?
- (5) What research tools should be used for a study of the system?⁴

I have already reported the results of an investigation into the strategic parts of the system and their dependencies elsewhere.⁵

(1) The strategic parts of the system

The strategic parts of the system can be identified as follows:

- (a) The Minister of the Department of Employment and Productivity (DEP) (previously the Ministry of Labour) supported by some thousands of civil servants.
- (b) The Industrial Training Boards (ITBs) of which there were 28 in October 1969, plus one voluntary ITB.
- (c) Industrial undertakings of which there were approximately 650,000 in October 1969 within the scope of ITBs.
- (d) All present and intending employees of firms within the scope of ITBs, of which there were approximately 15,000,000 present employees in October 1969.
- (e) Various other bodies such as the CTC, unions and employers' associations.

(2) The nature of mutual dependencies

The Department of Employment and Productivity (DEP) has crucial powers; to set up and dissolve the ITBs and the Central Training Council (CTC); to define the scope of Boards; to define their composition; and to provide finance for certain objectives.

The ITBs also have very wide power to provide facilities as well as to make grants out of their levy funds.

The industrial undertakings within ITBs' scope must pay their levy and have an equitable right to participate in DEP and ITB training schemes. Provided they pay their levy, they also have complete freedom in deciding what form, if any, training should take within their employees' working hours.

Considerable control over industrial training, therefore, lies with the individual firm.

Present and intending employees do not generally have direct relationships with the ITBs, except that the Boards and the Department of Employment and Productivity may, in some cases, provide training or retraining facilities for which persons enrol directly.

We can identify three types of dependency within the components of the industrial training system. These are: Control, representative, and advisory.

Control relationships

The Department of Employment and Productivity controls the creation, composition, and dissolution of the ITBs and CTC. It provides administration for the CTC and the Minister must approve the annual levy order of each Training Board. DEP also have their own training schools and give specific grant aid to projects. Nevertheless, DEP has direct control only over small sections of the training undertaken.

Industrial Training Boards control the levy/grant mechanism and such facilities as they may choose to provide through their own administrative services. Within the ITB only the employer and employee representatives, who are equal in number, have the power to vote on the levy to be made. The educationists who are smaller in number cannot vote on this issue.

Industrial undertakings control the labour force which is available for training and, therefore, may determine whether such labour is to be released. They also may provide the initial finance for conducting their own training before they obtain grants if, in fact, they are eligible for them. The undertakings also control the reactions both to levy and grant which they may choose to pursue. They must pay the levy but they are not required to do anything further than this.

Employees have negative control over training since they may refuse to attend training courses or, if drafted, refuse to co-operate.

Representative relationships

The representative relationships involve first the Unions who provide the main bulk of the worker representatives sitting on Industrial Training Boards. The Employers Associations influence the employer representation on the Boards, and Technical Colleges provide 60 per cent of representatives of education. The balance is provided by political and administrative officers from local authorities. All these interests are represented, together with those of the ITBs and the nationalised industries on the Central Training Council and its committees. A more detailed

⁴ W. G. Scott, 'Organisations: Structure and Behaviour', quoted in *Organisation Theory, an overview and appraisal*, ed. J. A. Litterer. New York, Wiley & Sons, 1963, p. 19.

⁵ Douglas Garbutt, 'The Industrial Training System', *Socio Economic Planning Science*, Vol. 4, 1970, pp. 341-64, (Pergamon Press).

examination of these dependencies is given in my previous article.⁵

Advisory relationships

Only the Central Training Council has a specific advisory role, but the Department of Employment and Productivity appears to play quite an active role, both informally through the normal channels and formally through the assessors which are appointed to Industrial Training Boards but who do not vote on its decisions and who generally contribute to discussions only on invitation. It may be noted that most Industrial Training Boards also provide advisory information through their publications and seminars.

(3) Processes linking the components together and facilitating adjustment

Underlying any industrial system is a complex and dynamic set of interrelated flows of men, materials, money and information.⁶ The industrial training system is no exception.

The labour market

Training takes place in the context of the labour market which will be affected by the general state of the economy and the ability of firms to substitute machines for labour. They may be expected to do this, increasingly, as technology changes and as the cost of labour rises. The labour market also is affected by the degree of mobility of labour and the existence of the general skills which can be sold in the market place. Some companies may have new technologies which involve highly specific skills of use to their own company and, whilst these skills may attract a high reward while persons are within the employ of the firm, they will have little value in the open market.

The political system

The training system is also, to some extent, part of the political system involving the government, directly, through the Department of Employment and Productivity, the Ministry of Technology, and the Department of Education and Science, and also, indirectly, through the actions of the quasi-independent agencies, the ITBs, with their fund raising powers and their independent administration. Despite the independence, it is politically difficult for the Government to ignore the actions of a single Board; e.g. the action of the Agricultural Industry Training Board. This ITB encountered considerable resistance in its first year. As a result, the Government provided financial support in its second year, and provisions for the levy was made in the 1970 Agricultural Price Review.

⁵ Jay Forrester, *Industrial Dynamics*, Boston Massachusetts Institute of Technology, 1961.

Industrial and social relations

The training system, obviously, exists within the wider social system and, specifically, is articulated with industrial relationships through the employee – employer representatives on the ITBs. The more widespread provision of industrial training, coupled with rising standards of education, will probably increase social mobility. This may be a desirable aim, since it may increase economic and social efficiency and, also, increase individual job satisfaction but, as has been pointed out by Professor Glass,⁷ it may be doubted whether increased social mobility, achieved in this way, would be an unmixed blessing.

Very high social prestige is attached to ability and training; it would be a great pity if such avenues were, increasingly, the only methods to obtain social prestige.

It cannot be long before sociologists begin to devote the same kind of attention to the structure established by the industrial training system as they have already devoted to the educational system and, indeed, it is high time that closer attention was paid to the broader social objectives which concern the kind of society which we wish to see developed and, therefore, concern the form, content and scope of industrial training.

Although we do not know a great deal about British managers, we do know that, from various studies,^{8, 9, 10} they are relatively highly educated, generally recruited from the Public and Grammar Schools, and are more likely to be Oxbridge men than Redbrick, and more likely to be accountants than engineers. These facts may be of considerable importance in determining the spending priorities which eventually become established in the industrial training field.

The levy-grant mechanism

A distinctive feature of the industrial training system is the levy/grant mechanism which involves the control of financial flows between industrial undertakings, the ITBs and back to the undertakings.

The power to make a levy is not unique. After all, a levy is merely one form of tax and there are a variety of statutory and voluntary Boards which have the right to make levies.

The power to make grants to firms conforming to

⁷ D. V. Glass, *Social Mobility in Britain*, ed. Glass. London, Routledge & Kegan Paul Ltd, 1954, p. 24.

⁸ Acton Society Trust, *Management Succession*, Acton Society Trust, 1956.

⁹ G. Copeman, *Leaders of British Industry*, London, Gee & Co, 1955.

¹⁰ R. V. Clements, *Managers: a study of their careers in industry*, London, Allen & Unwin, 1958.

specific behaviour is also not unique and, indeed, subsidies and grants in various forms are widespread, both in a specific and a general form.

The composition of the ITBs is also not unique; it parallels the structure of wages councils and some other councils in the nationalised industries. What is unique about the ITBs is a combination of all these features; levies, grants, independent administration, and representative government.

What levy and grant can achieve

The first thing to be said about the levy/grant mechanism is that it can only be assured of raising sufficient money from the industry to meet the expenses of the Training Board. It will only redistribute the costs of training if those costs are accurately ascertained and the levy and grants are closely related to costs. However, if grant is related to costs, the effect will be to reward the inefficient training firm (this is the cost-plus system whereby firms obtain more recompense the higher their costs are). This is the reason why most Industrial Training Boards have turned their faces against relating grants to training costs.

Furthermore, if companies follow policies based on a comparison of grants to levy only, then they are likely to be misled into uneconomic expansion of training. If a training board follows a policy of dividing grant proportionately among firms, then the grant of the firm in relation to its levy paid depends upon the total amount of funds available for grants, the proportion of the industry's training undertaken by the firm and the size of payroll (or number of employees, if that is the levy base). Since all these factors are unlikely to be known at the time when training is undertaken, it is unlikely that a comparison of levy and grant can ever be accurate enough to guide company policy.

Also, if the training board adopts a policy of paying specific grants for training rather than proportional shares of the funds available, it can easily find itself in an unstable situation in which it runs out of money or accumulates a surplus and is forced to adjust its levy or its grants, or both. I have suggested elsewhere¹¹ that the planning of individual firms should be based on a comparison of costs, plus levy to grants, plus benefits of training. Levies, grants, and costs are reasonably easily determinable: benefits are exceedingly difficult to quantify. It can be shown, even on fairly simple assumptions concerning levies and grant, that the mechanism alone may introduce instability into an industry's training and a situation of stop-go.¹²

¹¹ Douglas Garbutt, *Training Costs*, London, Gee & Co, pp. 20-21.

Information flows and feedback

It seems unlikely that the simple mechanism of levy and grant can be an effective means of controlling industrial training. The imposition of a levy may attract management attention to the problem of training within the company and the prospects of grants may soften the blow if training is contemplated. The increase of training since the advent of the Industrial Training Act, lends some strength to the idea that this may be working. But, as soon as one goes beyond this simple initiation effect of the levy/grant system, it appears that other means of planning and control must be used. The most obvious available means is information. This means, however, is often sadly neglected and yet it is, probably, the most effective. This may be a matter of shared goals (or goal congruence). Man is a highly adaptive creature working within social organisations. The possibilities of accommodation and adaptation of behaviour are almost infinite, but they depend very much on the existence of shared objectives in the system. A plan cannot be effectively implemented if those responsible for implementation do not understand it and share some enthusiasm for it.

But, is there a plan for training? After some seven years of the operation of the 1964 Act, has the Department of Employment and Productivity really gone beyond the sheer administrative process of bringing the system into existence? Has it explored, with the ITBs, the specific problems of the various industries which they cover and carefully articulated their objectives so that they might be co-ordinated within the framework of a wider plan? To what extent has their 'muddling through' been based on a careful analysis of the first and second order consequences of their actions?

The need for quantitative data

To some extent these questions may be answered in social and psychological and political terms, all areas in which qualitative and value judgments are likely to play a large part. But, if the debate within these fields is to be ultimately fruitful, then there can be little doubt that the system requires quantitative data of a comprehensive nature.

To some extent this is provided. Each Industrial Training Board is required to publish annual accounts and a report, and these reports often contain useful information. Similarly, the DEP from time to time publish statistics highlighting favourable aspects of their activities, but what is really needed is a more consistent, comprehensive, and coherent system of

¹² Douglas Garbutt, 'The Business of the ITBs', *Management Today*, September 1970, pp. 99-101.

social accounting. Such a system must be based on a comprehensive view of the industrial training system and it must, essentially, achieve three objectives:

- (1) To structure information on the past.
- (2) To formulate goals (desired future system-states towards which commitments are made).
- (3) To establish criteria of evaluation.

It seems incredible, for instance, that the simple goal of expanding industrial training should have been adopted. It might have been desirable to adopt an objective of expanding both forms of industrial training which are likely to give the maximum economic benefit. Even so, one would only want an expansion of such training if there were some reasonable assurance that the facilities and organisational framework exist for the utilisation of the resulting skills. Without a clearer definition of goals at the National (Ministerial) level, it would be over-optimistic to expect Industrial Training Boards themselves to generate satisfactory definitions of their goals. One may compare the recommendations of various Boards with the extent to which their worker representatives are representative of craft unions, and anticipate that this will be reflected in an increasing conformity to old practice and age-old apprenticeship schemes. One would not be surprised to find a Board such as the Glass, Ceramics and Mineral Products ITB adopting an innovatory role, since its worker representatives are mainly drawn from the general unions. These are simple observations and we, as yet, know very little about the relationship between ITB policies and their composition.

Indeed, it is also astonishing that the ITBs should almost universally have adopted the system of 'budgeting' for training levies and grants, which is open-ended. Many of them establish grant schemes promising specific payments in circumstances when they do not have control over the number of payments which would be required. Given a fixed rate of levy for any accounting period, and it is obvious that at some time grants may very much exceed the funds available for levies; one can see here the use of the governmental budgeting model where civil servants may be depended upon to spend more or less within the funds voted to them. But, given that ultimate control of training remains with the industrial undertaking, the grant schemes of ITB must take this into account. Indeed, some ITBs have avoided trouble on levy and grants, such as the first, the Wool Industry ITB, by using a grant scheme whereby funds were shared according to the proportion of training undertaken by a firm. A Survey of ITBs, which I conducted in 1970, showed that the majority of them were now moving away from the levy/grant system. But the same survey showed that very few of

them have got very far towards clarifying the fundamental objectives of industrial training by conducting cost benefit analyses of the various forms of training which are undertaken by their industry. Little work has been done in this field, and what has been undertaken is rather limited in scope. And, again, some work which has been done has not been disseminated.

The danger of economic philistinism

It will, of course, be argued that there is a danger of economic philistinism; that the systematic approach to organisational purpose which is provided by budgets and the accountants leads organisations to neglect technological and other problems that cannot be expressed in budgetary terms. For instance, the concentration on the enlargement of balance sheet assets may lead companies to neglect their human and organisational assets. These may, indeed, be of far greater value to the firm than the plant and equipment and current assets which are shown in the balance sheet; similarly, the true quality of training may not be measured in terms of costs or benefits.

Of course, we may use certain other parameters to indicate the quality of training; for instance, the engineering ITB attempted to estimate the quality of training through forty factors of a qualitative nature (whether training officers were employed, whether they were trained, whether visual aids were used, etc.), and to express these in a quantitative index. It is perfectly true that procedures such as this involve a surrogate measure which, whilst valuable in some circumstances, may be dangerous if, instead of being used as an *indicator* of quality it becomes a *substitute* for it. In fact, the argument is a general one; quantification of value functions into value indices, whether this is money or other measures of pay-off, may lead to ethical dangers, since the apparent clarity and simplicity of the index may lead to manipulative procedures which ignore the true quality which is attempted to be measured through the index.

Present methods of accounting do not take account of factors such as organisational loyalty, morale, and efficiency, although developments are already taking place in the United States to incorporate these measures into accounting procedures. However, it will be a long time before such systems of comprehensive social accounting are in operation. In the meantime, our information systems should provide for a much wider variety of data of all kinds, whether quantitative or qualitative, and we ourselves need to recognise that the way to fight information overload is not by restricting our focus to narrowly defined problems which we are able to solve – even if they are not the problems with which we are beset – but by

enlarging the scope of our concepts so as to incorporate a wider view of the systems in which we are involved, and thereby increase our ability to handle the necessary wide range of information. Wider knowledge and greater information will, therefore, mean a widening of our ethical horizons.

(4) What are the goals sought by the system?

The usual goals quoted for the industrial training system are those as stated in the White Paper which preceded the Act: briefly, to improve the quality of training, to increase the volume of training, and to re-distribute the costs of training more equitably within industry. We have already indicated above that the cost equalisation objective may be a chimera. If industries and their Training Boards attempt to stabilise training at the point where costs plus levies are lower than the benefits or grants to be obtained from the training or, at least, equal to them at the margin, we may expect industries to determine the cutoff point at which they will cease to expand training. Once a Training Board has got into business then this is its primary problem: at what point, if any, should the amount of training be restricted or even diminished? This question can only be answered within the broader context of the labour market. We have little empirical evidence of the way in which firms make their decisions on training, but a small sample of training officers, questioned late in 1969, showed that sixteen out of the twenty considered that levy/grant should be ignored and suggested that training should be undertaken 'where necessary' or 'train on the basis of need regardless of all else'.

If, indeed, the training system is accepting the goal of improving the quality of training, then it would seem axiomatic that this training should be relevant to real needs. These may be identified by firms, individuals, industries, and by society at large. These needs need not necessarily be identical in all respects. There would, therefore, seem to be some scope for differentiation of objectives between the various components of the training system, and I have suggested, elsewhere, that there might, indeed, be a hierarchy of cost/benefit studies.¹¹ Objectives also need to identify the place where training is best provided for: on-the-job or off-the-job facilities within the firm, or in outside institutions? It requires a definition of the respective roles within training and who is to do which jobs? Improvement of the quality of training also requires us to stipulate who is to evaluate effectiveness of training: the trainees, the trainers, or outside agencies? Again, we must answer that each element and each component involved in the training system must conduct an evaluation of its operation

from its own point of view. There is no one single overall objective method of evaluation training activity. There can only be a multiplicity of evaluations conducted from various viewpoints.¹² But, one of the important objectives of an organisation such as the ITB or the DEP is to provide the framework and the machinery for co-ordinating and comparing and integrating the evaluation process so that information about evaluations is disseminated and the ultimate aim of goal congruence is achieved (or approached more closely).

(5) What research tools should be used for a study of the system?

The first need is for an integrated coherent system of data collection and publication which should, as far as possible, be on uniform lines over the whole of the Training Boards. We may expect the present variation in information standards to be ironed out over a period of time. It is regrettable that the Department of Employment and Productivity has so far failed to produce regular statistics or encouraged the ITBs to standardise, in any significant way, their information reporting. Although they have improved, the annual reports of the Training Boards are still too skimpy in many cases. However, it can also be argued that too little use has been made of them by outside commentators.

It would also be helpful to have carefully selected key growth, quality, and cost re-distribution indicators for the system as a whole, for each industry and for various sectors within industries. Such key indicators should not be regarded as restrictive, but more as minimum data for publication: again the Department of Employment and Productivity has accomplished this task quite well in the research area but not in relation to the operations of the Industrial Training Boards as yet.

In addition to operational information which will be of value to those involved in the system as well as those studying the system, as it were from outside, the availability of finance for research opens up considerable prospects for university and other research projects which have relevance to industrial training in the short and in the long term. To some extent this research may be work of a sociological and psychological nature which might equally be supported by other agencies, but there are certain areas, such as accounting, organisation and ergonomics which are particularly suited for support by industrial training research funds. In addition to more fundamental research, some enquiry is needed to establish the evolving objectives and attainments of all the components

¹¹ P. Hesselings, 'Strategy of Evaluation Research', Assan, Netherlands, Van Gorcum & Co, 1966, p. 49.

involved in the industrial training system: the DEP, the ITBs, industrial undertakings, and individuals employed in industries. It is, however, axiomatic that study of the system as such should not be conducted by parties who are playing a particular role in that system. In contrast, the monitoring of the system performance and state should always be the basis of its management, and must be conducted by the components involved in the total system.

(5) Characteristics of the industrial training system

The industrial training system betrays a number of characteristics which are typical of industrial organisations or systems.

- (1) It is a system involving men and resources existing in time and space.
- (2) It is an open system having transactions with its environment.
- (3) It is a system involving internal and external relationships of conflicting co-operation.
- (4) It is a system designed to develop and allow the use of power so that actors and components within the system will achieve authority, exercise responsibility and be subject to accountability both internally and in external relations.
- (5) It is a system which incorporates information feedback on past results and future expectations, using a variety of channels, some formal and some informal. (It may be noted in passing that the criticisms, made above, of the formal information systems established by the industrial training system, do not imply that information does not circulate; they merely imply that poor information circulates.)
- (6) The system exists in changing situations which really require dynamic concepts to understand what is happening. But, the components in the system will attempt to express dynamic situations in terms

of static concepts. There is nothing wrong with this procedure if the static concept, which helps us to handle situations, is recognised as the incomplete construct that it is. A danger arises when the static concept is seen as truly reflecting the changing, dynamic situation.

(7) The system is complex; it involves a main system but it can be analysed down into a series of subsystems which overlap, adjoin, or are separate.

(8) The system is loose and subject to imperfect co-ordination. The degree of autonomy of the components within the system may vary, and the method and type of control, which can be or is exercised, will also vary.

(9) The system, like all social systems, is so complex that it is only partially knowable. Clearly, a system involving 650,000 industrial undertakings and some 15,000,000 people, is so complex that there are sure to be certain 'black regions' of inadequate knowledge of variables which will affect system performance. There may be certain non-quantifiable variables which are only dimly apprehended.

(10) The system is subject to uncertainty arising from the present and future environment and the doubt about the first and second order consequences of our actions.¹⁴

One manager to whom I presented this list of characteristics of social systems, suggested to me that it was the most depressing list he had ever seen. Another, who was also a control engineer, told me that it was a classical description of a system which was 'out of control'. Yet it is the complexity and the uncertainty that make the system so fascinating, both for those involved in it and for those who observe it. At the same time, the inadequacy of our knowledge presents a challenge which we cannot refuse.

¹⁴ B. M. Gross, 'What are your organisation's objectives? A general systems approach to planning', *Human Relations*, 18, 1965, p. 195.

This article is based on American experience. The legal references are American. The American spelling of 'installment' with two ls is preferred by the authors. The bracketed numbers in the footnotes refer to items in the Bibliography given at the end of the article.

The Adoption and Diffusion of an Accounting Innovation

E. E. Comiskey and R. E. V. Groves

Introduction

This study investigates a general descriptive theory of the adoption and diffusion of innovations proposed by authors from other disciplines and tests its applicability to accounting innovations. The principal accounting innovation studied was the introduction of the installment method of reporting for tax purposes.

Originally, companies were required to report revenue from installment sales on an accrual basis in both tax and shareholder accounts. In the 1926 Revenue Act companies were permitted to change from the accrual to the installment method of reporting earnings for income tax purposes. The accrual basis recognises all profit at the point of sale, whereas the installment method recognises profit only as cash is received from the purchaser. Use of installment reporting generally brings about deferral of tax payments relative to tax payments that would have been due under the accrual system. Thus, for most companies making installment sales it would appear beneficial for them to change their tax reporting method to the installment basis.¹

Under the provisions of the 1926 Act, there was a changeover cost when going from accrual to installment reporting.² The 1954 Act³ alleviated somewhat the penalty costs of changeover. These penalty costs arose from the double taxation of the receivables outstanding at the end of the last year the accrual method was used. Only by selling its closing installment receivables prior to changeover could a company minimise its penalty cost.

Selling the closing receivables to escape the change-

over cost was legalised for tax purposes by the decision in *City Stores v Smith* in 1957⁴. Naturally there were still some expenses involved in doing this so it was not a completely costless book transaction. The final enactment having a bearing on the decision to change to tax reporting method was the 1964 Revenue Act.⁵ This Act extended, for tax purposes, the use of the installment reporting method to sales made on a revolving credit basis.

Background

Historically the majority of work on time patterns of adoptions of innovations has taken place in the area of rural sociology. Ryan and Gross,⁶ Rogers⁷ and Griliches⁸ are but four of the main contributors in this area. In 1962 Rogers wrote a book⁹ summarising the common threads running through the research into adoption and diffusion of innovations. Since the publication of Rogers' book interest has broadened into industrial areas.¹⁰

Adoption frequency distributions

One of Rogers' hypotheses is that the shape of the adoption frequency distribution over time is bell-shaped, tending towards normality. Bass and King, on the other hand, in their work on consumers' first purchase posited a curve form that need not be normal or even uni-modal. Rogers supported his hypothesis for a bell-shaped adoption distribution

⁴ *City Stores v. Smith*, 154 F. Supp. 343 (DC Pa 1957).

⁵ S. 453 (a) (2).

⁶ (44).

⁷ (41).

⁸ (21).

⁹ (40).

¹ (24) gives a full discussion of benefits and costs of changing over to the installment reporting method.

² S. 212 (d).

³ S. 453 (a).

¹⁰ This is mainly due to the work of Bass and King (6) in the marketing area, and Lindhe (31), Archibald (32) and Tritschler (52) in the accounting area.

with empirical results from ten innovations in the field of rural sociology. Of these ten, six had normal distributions whilst four were nearly normal and definitely uni-modal. His theoretical arguments were based upon the twin concepts of the interaction effect and the learning curve.

From work in psychology Rogers showed that the learning effect could help produce an adoption curve which was approximately normal, whilst the interaction process between the members of the population of potential adopters would also give rise to this curve form. Interaction is the process through which adopters of an innovation influence those other members of their social system who have not yet adopted. Interaction between population members would increase over time until approximately half of the members that were going to adopt had adopted, then interaction gradually declined as the remaining members decided to adopt.

Bass and King in their work in the first purchase of consumer goods allowed only two groups in their world – the innovators and the imitators. Their assumption was that:

The probability that an initial purchase will be made at T given that no purchase has yet been made is a linear function of the number of previous buyers.¹¹

For our purposes this assumption can be rephrased into an accounting context so that it now reads:

The probability that adoption of an accounting innovation will be made at T , given that the company has not yet adopted, is a linear function of the number of previous adopters.

Because of the form of the probability equation, the

adoption curve can take one of two forms depending on the relative magnitude of its parameters. Figure 1 gives a graphical representation of the two types of curves possible under the Bass assumptions.

Adopter categories

Using the concept of a normal frequency distribution Rogers propounded a thesis that there were five adopter categories.¹² These groups were split in the following proportions of the area under the adoption curve:

(1) Innovators	(2½%)
(2) Early adopters	(13%)
(3) Early majority	(34%)
(4) Late majority	(34%)
(5) Laggards	(16%)

The curve form for each innovation will depend on the particular characteristics of that innovation. Because each innovation is different, the proportion of the population called innovators, under the Bass description, will vary from innovation to innovation. Bass and King¹³ found significantly different values for the innovatory proportions for the various consumer products they tested their hypothesis on.

Ryan and Gross¹⁴ were among the first sociologists to apply statistical tests in the determination of the form of the adoption frequency distribution. They found that their evidence of adoption frequencies was nearly normal. Griliches¹⁵ in some later studies found that the logistic curve gave better fit for cumulative data than the normal did for the individual data. This supported some earlier work by Chapin.

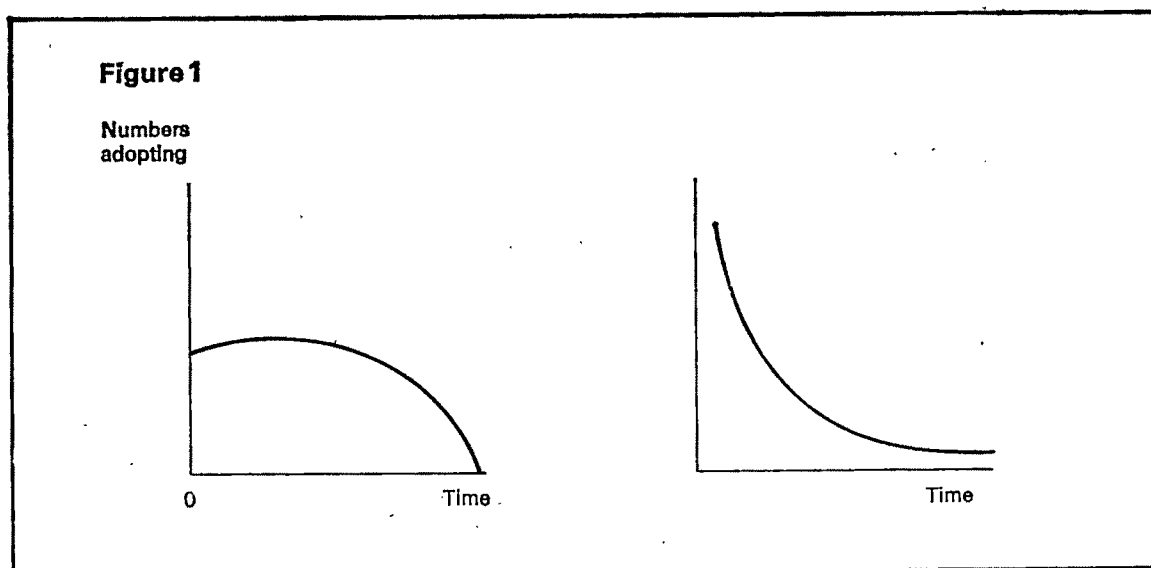
¹² See (41) and (40).

¹³ See (6) and (5).

¹⁴ (44).

¹⁵ (21), (22), (23).

¹¹ See (6) p. 4.



Rogers has taken this evidence from Griliches as additional support for his bell-shaped hypothesis, since a normal or bell-shaped frequency distribution will give rise to an S shaped or logistic cumulative frequency distribution. Unfortunately there are other frequency distributions which are neither normal nor bell-shaped which will give rise to logistic type of cumulative frequency distribution.

Accounting work

Lindhe¹⁶ in his sample of 534 companies gives the numbers and dates of the adoption of accelerated depreciation for tax purposes. Later we shall show that the frequency distribution formed from this data does not satisfy Rogers' hypothesis.

In another accounting study, Livingstone¹⁷ formulated the following general hypothesis:

Once users of accounting information have learned to adjust for the effects of one set of alternative accounting methods, (e.g. in valuing the rate base) then they will tend to adjust rapidly for the effects of new sets of alternative accounting methods that confront them (e.g. the treatment of the tax reductions due to accelerated depreciation). In psychological terms, they have formed a learning set.

This result could be construed as a property of innovators in the adoption of accounting innovations. Naturally additional economic and behavioural reasons could be found to explain further the particular pattern of adoption for any new accounting method.

Sorter, Becker, Archibald and Beaver¹⁸ sought to define a theory of corporate personality, which in turn affects adoption patterns. Their hypotheses were:

- (1) a corporate personality does exist;
- (2) accounting data are useful in defining corporate personality;
- (3) the corporate personality is partially non-economic in nature We contend that the nature of the corporate personality . . . , which we shall call conservatism . . . a generic concept that embraces many kinds of behaviour including intolerance of ambiguity, solvency position, reluctance to change, minimisation of book income, and risk aversion.

Their empirical results showed that companies which had continued to use straight-line depreciation accounting for book and tax purposes had more conservative financial ratios than those companies that had adopted accelerated depreciation reporting for both book and tax purposes. This result supported their hypothesis. In our work the population was

split into two groups, adopters and non-adopters, but the inference is that one could group the adopters, perhaps along lines such as Rogers suggests, and find increasing conservatism as one moved from innovators down the scale to laggards.

The study

This empirical study attempts to test whether or not the theories posited by Rogers¹⁹ *et al.*, can be extended in a general form to include other innovations and more especially accounting innovations. It is hypothesised that not all adoption frequency distributions are normal, or even uni-modal, nor would one population of prospective adopters give rise to similar adoption frequency distributions for different accounting innovations. In addition, the conservatism principle as hypothesised by Sorter, Becker *et al.*²⁰ is tested for its relevancy to the population under study using the three ratios, acid test, current ratio, and debt/equity ratio. Finally the major characteristics of the innovation are investigated and discussed.

The data

Two groups of companies were investigated. The first group was the sixty publicly quoted companies listed in the 1968 edition of Moody's under Departmental Stores. The second group investigated was a randomly selected sample of 159 member companies of the National Retail Merchants' Association.²¹ These companies all had sales of less than \$50 million in 1968. We shall call the companies from the first group the large companies, and those in the latter group the small companies.

The major emphasis of the empirical work is based upon the large companies as there are more public sources of information regarding their financial performances. The main data sources used were Moody's Industrial Manual, Standard & Poors' Manual and Compustat tape, published annual reports and a questionnaire sent the sample companies.²² The same questionnaire, with a couple of small amendments, was also sent to the small companies.

Questionnaire response

The questionnaire response from the large companies was in excess of 60 per cent. which was good compared to responses to normal NRMA surveys. The response from the small companies was not so good. Only 36 per cent returned the questionnaires, but this figure falls to 30 per cent for usable responses. A

¹⁹ See above p. 67.

²⁰ See above.

²¹ Generous thanks are due to the NRMA, and in particular Mr S. Flanel, for the help given in making available their mailing list and selecting the sample.

²² See Appendix 1 for a copy of the questionnaire.

¹⁶ (31).

¹⁷ (33).

¹⁸ (48) p. 200.

breakdown of the usable responses is provided in Table 2.

TABLE 2

Percentage breakdown of the usable responses

	<i>Large</i>	<i>Small</i>
Companies not making installment or revolving credit sales	7.1	25.4
Companies selling receivables to external financial institutions	10.7	4.3
Companies using the installment reporting method for their installment and/or revolving credit sales	82.2	70.3
	100.0%	100.0%

Basic questionnaire analysis

In Table 2 the higher proportion of small companies not making installment and revolving credit sales is due to a number of factors. Firstly, the size differential, the smaller the company the lesser the knowledge on financial matters of this nature. Secondly, the large companies are all departmental stores and therefore sell most types of consumer products, whereas the membership of NRMA includes many small specialist retail ventures which do not require credit selling methods.

All the large companies making installment and revolving credit sales (and not selling the paper to the financial institutions) now use the installment method

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of reporting their profits for income tax purposes. On the other hand, only 61 per cent of the small companies respondents now use this tax reporting method. It is true that the low sample response may have introduced biases into the results, but at least they seem to be in the direction one would expect, i.e. one would expect a greater proportion of large companies to have adopted the innovation by this point in time.

Further support for this argument is given in Figure 2 and Table 3. Figure 2 presents the frequency distribution for the adoption by the two groups of companies. Table 3 gives the cumulative percentages of adoption for the same period. The time periods in this Table have been split into odd intervals in an effort to show the effects on adoption of the various legal changes, e.g. 1954 Revenue Act, 1958 City Stores case, etc. By searching through annual accounts and Moody's Industrial Manual, it was possible to determine the adoption year of a number of the large companies that did not answer the questionnaire, thus improving the empirical findings for the large companies.

TABLE 3

Cumulative percentage of adoptions by companies that had adopted by 1970

	<i>Large</i>	<i>Small</i>
1920-53	27.5	5.0
1954-57	32.5	20.0
1958-63	57.5	40.0
1964-70	100.0%	100.0%

Figure 2

Pattern of adoption of the installment reporting method

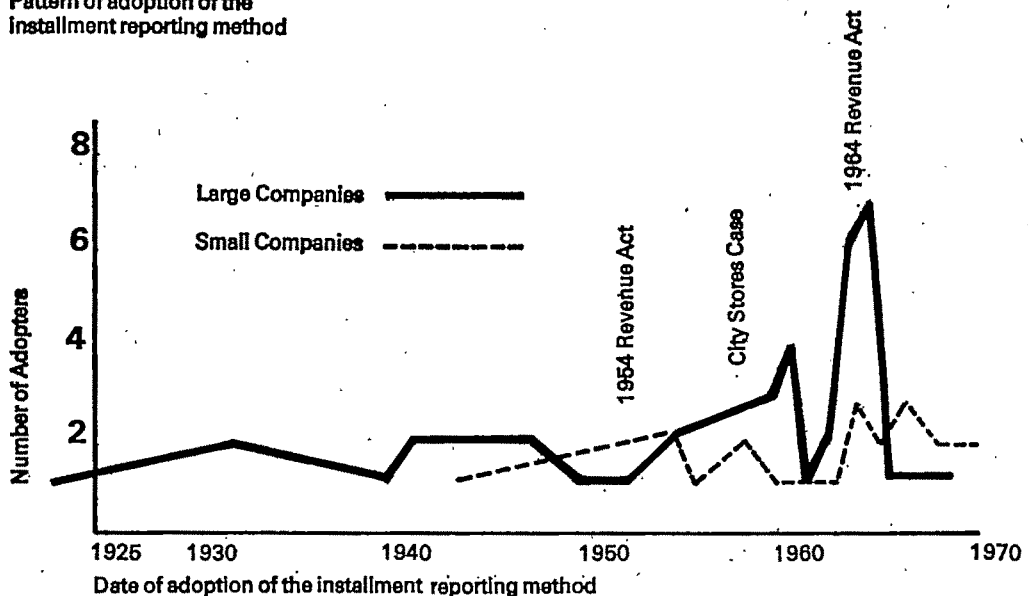


Table 3 also suggests something that is substantiated later: the principal influences on the adoption of the installment report method were (1) the City Stores case and (2) the 1964 Finance Act allowing revolving credit sales to be reported on an installment basis.

As there were only twenty adopters in the small company sample, it was decided not to do any further tests on the form of the small company adoption frequency distribution. Thus, we concentrated the rest of our efforts on the large companies for which there were more sources of information.

Analysis of adoption distributions

Using the large companies only, frequency distributions were determined for (1) their adoption of the installment reporting method, (2) the first year of making installment sales, (3) the first year of making revolving credit sales, and (4) the first year of adoption of the accelerated depreciation method for tax purposes. Rogers' descriptive theory that these adoption patterns would be normal or tend to normality was tested using the Kolmogorov-Smirnov (KS), one sample goodness-of-fit test. The null hypothesis under this test is that the observed cumulative frequency distribution equals the specified cumulative frequency distribution of a normal curve with similar mean and variance. At the 5 per cent level of significance, the normality of the distributions of the adoption of the installment reporting method, and the accelerated depreciation method for taxes could not be accepted; whilst the null hypothesis for the normality of the other two adoption distributions could not be rejected at that same significance α level. These results are

presented in Table 4.

TABLE 4
Results of the Kolmogorov-Smirnov test

	Installment sales	Installment method for taxes	Revolving credit sales	Accelerated depreciation
D.	·0762	·2759*	·1707	·2937*

* D value greater than critical level at $\alpha = .05$ level.

These results in Table 4 add support to those who do not accept Rogers' generalisation that adoption distributions are normal or at least bell-shaped. Bass' approach to adoption distributions is more flexible. It can be written as follows:

$$P(T) = p + q/m \cdot Y(T)$$

where $P(T)$ is the probability that an adoption will be made at T , p is the coefficient of innovation, q is the coefficient of imitation, m is the number of potential adopters, and $Y(T)$ is the cumulative number of adopters at T . Solving this equation we get, for the discrete case, an equation²³

$$S_T = pm + (q-p) Y_{(T-1)} - q/m \cdot Y_{(T-1)}^2$$

where S_T is the number of adopters at T . Regression analysis with S_T and $Y_{(T-1)}$ provides estimates of β_0 , $\beta_1 + \beta_2$ from which values for p , q and m can be developed.

The two adoption distributions tested were the installment reporting method and the use of accelerated depreciation for tax purposes. The results are shown in Table 5.

TABLE 5

	R^2	F	β_0	β_1	$\sigma\beta_1$	β_2	$\sigma\beta_2$
Installment method	·232	7·265	—·412	·194	·062	·004	·002
Accelerated depreciation	·518	6·983	6·366	—·422	·246	·008	·01

Both equations were significant at the $\alpha = .05$ level. At the $\alpha = .05$ level the null hypothesis that the residuals of each equation were normally distributed could not be rejected.

Using the Durbin Watson D test positive autocorrelation was shown for the installment method, whilst the accelerated depreciation distribution had a satisfactory D value at the $\alpha = .05$ level.

For p and q to have positive values, which they must since they are probabilities, β_0 and β_1 must be positive and β_2 negative. From Table 5 we see that for one distribution β_2 is positive and β_1 negative, whilst β_0 is negative for the other one. Thus in both cases the basic assumptions have been contravened, and we must reject the hypothesis that the probability that a

firm will adopt one of these two particular accounting innovations at time T , given that the firm has not yet adopted, is a linear function of the number of previous adopters.

Earlier in this paper reference was made to the study by Lindhe²⁴ of the adoption by 534 companies of accelerated depreciation reporting for tax purposes. Using the information provided in that study, regression analysis was again used to test Bass' generalised hypothesis. From the results we obtained a value for β_2 such that the null hypothesis of $\beta_2 = 0$ could not be rejected at the $\alpha = .05$ level. Thus once again the basic underlying assumptions were contravened.

²³ See (5) for the algebraic proof of this result.

²⁴ (31).

Rogers' descriptive theory accepts as evidence of a bell-shaped adoption frequency distribution a cumulative adoption distribution that can be generated from a logistic curve equation. In fact, non-bell-shaped frequency distributions can have a cumulative form satisfying a logistic relationship. This latter point is significant because under the logistic relationship the rate of adoption is proportional to the adoption already achieved and to the upper fixed limit. The upper fixed limit being the ratio of the final cumulative number of adopters to the number of potential adopters. This cumulative curve does satisfy Rogers' basic reasoning for a normal frequency distribution, i.e. interaction between the companies, learning curve effects, etc.

The form of logistic curve tried was²⁵

$$\log \frac{p}{k-p} = a + bt$$

where values k and p can be absolute or relative, and
 p = the cumulative proportion (amount) of adopters at t

k = the finite proportion (amount) limit of adopters (upper fixed limit)

b = the rate of adoption

a = constant of integration

t = time variable

For our purposes the upper fixed limit, k , was taken as 1.0.

The regression analysis results are shown in Table 6. The residuals were tested for normality and at the $\alpha=0.05$ level for all three regressions the null hypothesis could not be rejected using the KS test, and only the installment reporting equation showed a small amount of positive auto-correlation using the Durbin Watson test.

The F values were all significant at the $\alpha=0.05$ level, and thus the null hypothesis that the rate of adoption β_1 is proportional to the adoption already achieved and to the distance from the upper fixed limit cannot be rejected. The effect of the auto-correlation would be to deflate the β_1 value of .119 from the true value, but since we are interested in the general rather than the exact form of the distribution we did not pursue the corrected form of the distribution.

Rogers' idea of normality has been criticised earlier

by Sorokin.²⁶ Rogers' answer to Sorokin's attack is incorporated in a footnote in his book²⁷ which states:

No claim is made, however, that adopter distributions are necessarily normal. Sorokin (1959, p. 634) has attacked such a claim: 'The convincing logical considerations as well as the factual tests do not give any basis for a belief in the existence of any "normal" or even typical curve of diffusion or diffusion rate for all cultural values in all circumstances. Such a "normal" curve is a myth.' I prefer to disagree with Sorokin, as do most diffusion researchers. The normal adopter distribution is useful if viewed as an 'ideal type' that provides a standard from which statistical goodness-of-fit can be computed.

We admit that the sample sizes we have worked with have not been as large as we should have liked, but they are nevertheless still large enough for the results to be meaningful. Thus from our results we suggest that the answer lies somewhere between the two opposing views of Rogers and Sorokin. The concepts that Rogers uses to support his arguments for normality, e.g. interaction, learning curve effects, etc., can still be applied to non-normal distributions. The particular innovations here are cases in point, since there was obviously interaction between companies, especially in the accelerated depreciation situation. In this case the interaction came both before and after the 1954 enactment, since companies worked together to produce the lobby to get the law enacted, and then later other interaction took place through various channels in learning about the new law and its ramifications.

Due to the different characteristics of each innovation *prima facie* it would not seem correct to generalise on a particular form of adoption distribution, and this point is shown up by the results in this study. Within the fiscal year of 1954, 67 per cent of the firms in Lindhe's sample had adopted accelerated depreciation for tax purposes (1954 was the year this law was enacted). If we compare the characteristics of this innovation with those of the installment method, we can strengthen our case against generalisation of adoption curve form. The accelerated depreciation ruling

²⁵ See Griliches (21) and Kuznets (30) for further elaboration on the logistic curve.

²⁶ (46) p. 634.

²⁷ (40) p. 158.

TABLE 6

	R^2	F	β_0	β_1	$\sigma\beta_1$
Installment Method (large companies)	.801	64.209	-4.038	.119	.015
Accelerated depreciation (large companies)	.851	46.361	-.805	.304	.045
Lindhe's results	.990	646.751	.622	.140	.005

was easier to understand, it had greater tangible and immediate benefits, fewer practical problems of incorporating it, no 'penalty costs' involved in the change over, and much greater publicity since it was available to all companies rather than a small sector of the economy. Thus, we would expect faster adoption of the accelerated depreciation ruling. Hopefully, management becomes more sophisticated over time and management information systems will improve, thus enabling decisions to be made sooner and with greater certainty. This will therefore reduce the differences between adoption patterns.

Summarising, each innovation has different attributes which in turn are perceived differently by each company. These perceptions depend on many things, the economy, the underlying circumstances of the firm, etc. In addition, these circumstances are changing over time and vary from firm to firm. Thus we are really working in a multi-dimensional space. However, we, like Rogers *et al.*, have attempted a measurement only on a uni-dimensional scale, and therefore it is understandable that adoption curves do differ from one another and the 'ideal' of a normal curve.

Adopter characteristics

Three financial ratios were used to test the hypothesis that adopters are less conservative than non-adopters. This is the hypothesis propounded by Sorter, Becker *et al.*²⁸ Due to lack of financial information only the current ratio, acid test, and debt/equity ratio were used. The five years, 1959 through 1963, were analysed, with each company being included in the appropriate group depending on whether or not it had

adopted the installment reporting method. The results from the analysis of variance test are shown in Table 7.

From Table 7 we see that we cannot reject the null hypothesis that the two groups' means for each year and each ratio are equal, excepting in the single case marked *. Therefore, we cannot accept our original hypothesis that non-adopters are more financially conservative than adopters. This result places in question the generality of Sorter, Becker *et al.*'s results mentioned earlier. The use of figures from published accounts as data for testing hypotheses of this nature has been criticised by scholars in the past. The grounds generally cited against the use of these figures include:

- (1) companies in a sample have different year ends within any one calendar year;
- (2) different bases are used by companies when valuing their assets;
- (3) there is a possibility of window dressing by a company;
- (4) the influence of the auditor's character as well as the directors' personalities upon the final figures.

From these comments and the results listed in Table 7 above we suggest that further work is necessary in this area to clarify the situation.

Characteristics of the innovation

The large companies were requested in the questionnaire²⁹ to rank in descending order 13 factors. Based on results from a small pilot study, these 13 factors were those that were considered to be the most im-

²⁸ (48).

²⁹ See appendix, p. 77.

TABLE 7
Analysis of variance of financial ratios

		1959	1960	1961	1962	1963
Acid test	F	.053	.352	.040	.069	.053
	μ_1	2.03	1.93	1.87	1.83	1.78
	μ_2	1.95	2.14	1.95	1.74	1.69
Current ratio	F	.012	.033	.015	.008	0
	μ_1	3.36	3.41	3.23	3.15	3.17
	μ_2	3.51	3.68	3.43	3.29	3.19
Debt equity ratio	F	12.054*	2.846	2.350	3.396	.787
	μ_1	.4132	.3234	.3319	.3827	.3636
	μ_2	.1980	.2171	.2337	.2739	.3941

* Null hypothesis rejected at $\alpha = .05$ level.

μ_1 — mean of adopters' ratios

μ_2 — mean of non-adopters' ratios

portant in the adoption decision of the installment reporting method. Unfortunately none of the non-adopters completed this question, so we have no data on them. Of those who did answer this question 79 per cent of them adopted after 1960, thus it was decided to just look at this group of responses.

A coefficient of concordance W , corrected for ties, was computed for these rankings and amounted to .4041. A chi-squared value of 72.74 for the corrected W was obtained. Thus the value for W is significant at the $\alpha=.05$ level, and we can accept the null hypothesis that there is consistency in the ranks accorded the factors by the various companies. In order of importance, the most important factors in the decision or characteristics of the innovation were as follows:

- (1) The innovation made possible the deferral of tax payments.
- (2) The 1964 Revenue Code when revolving credit sales were made eligible for installment reporting.
- (3) The City Stores case, which enabled companies to sell their receivables prior to adoption.
- (4) (a) The 1954 Revenue Act which alleviated some of the penalty costs upon adoption of the installment reporting method.
- (b) The relative ease of change over to this reporting method for tax purposes.
- (5) The consideration of possible effects on tax payments, presently deferred, by changes in the tax rate.
- (6) The cost of additional book-keeping.

It is to be expected that the tax deferral factor would have been ranked first; however, what was more surprising is the strength of the second factor, the eligibility of revolving credit sales. Arguments could have been put forward that the City Stores decision would have had a greater bearing on the adoption decision. The reason for the above ordering is not that City Stores case was not important, because in fact the majority of post-1960 adopters sold their receivables prior to adoption, but that the use of the revolving credit sale was superseding the thirty-day charge account, and therefore greatly increasing in use.

The ranking of the additional book-keeping cost tends to suggest that for these big companies there was not much hardship involved in amending their book-keeping records to enable them to report income under the installment method.

Conclusions

This study has used Rogers' concept in preparing its adoption distributions. The main hypothesis that adoption distributions are normal has not been supported, since only two out of the five tested could have been generated from a normal distribution. It is from

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this start that Rogers goes on to build his adopter categories. These categories are all relative to the time scale of adoption. From this he moves to conclusions about adopters' characteristics, and adopters' perceptions of the innovation. This study also indicates that classification of adopters cannot be based on an uni-dimensional scale, and a very rapid one at that, but must be through the use of multi-dimensional scaling techniques. Support is given to this point from the results of the analysis of variance of the three financial ratios. It was not possible to differentiate between the adopter and non-adopter companies purely by means of any one of these ratios.

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APPENDIX E

QUESTIONNAIRE

INSTRUCTIONS

- A. An installment sale for the purposes of this study is defined as those sales where a service charge is included in the total price, and payment is made by means of a deposit at the contract date and the balance is paid off in equal installments over the remainder of the contract period.
The revolving credit sale mentioned in the questions is defined as an extension of the 30 day charge accounts. It allows an open line of credit to the customer who pays off some amount (a tenth, a sixth) or a minimum amount each month. Also, the customer can pay off his debt in full. Any unpaid balance at the end of a month is then subject to a credit service charge, presently at about 1%-1½% of the defined unpaid balance.
 - B. If there are no special instructions after a question, please circle the one response that best describes your answers even though other alternatives might be relevant. However, do feel free to add any comments or qualifications with respect to your answers.
 - C. If an open line is provided, please fill it with the appropriate code number, \$ value, or year requested by the question.
 - D. After some of the questions there are special instructions in parenthesis. Please follow these instructions carefully.
 - E. Please answer all questions if possible. We appreciate that you may consider certain of the information requested as being very confidential. If you feel unable to release this information please do not let this deter you from completing the remainder of the questions. If you are uncertain about an answer, then please give your best estimate, e.g. in questions 1 and 2 if the date is before 1954, then an approximate date would be quite acceptable.
The questionnaire should require less than fifteen minutes to complete.
1. If your company makes installment sales, please state the fiscal years the company started and, if applicable, stopped making installment sales.
Opening Year..... Closing Year.....
 2. If the company makes revolving credit sales, please state the fiscal years the company started and, if applicable, stopped making sales in revolving credit.
Opening Year..... Closing Year.....
 3. Please give the company's reasons for not making sales on an installment plan sooner than it did. (If the company still does not offer sales on an installment plan, please give its reasons.)
4. When did your company become aware of the availability of the installment method of reporting for tax purposes?
 5. From what source did the company become aware of the installment method of reporting for tax purposes?
Auditors
Trade Association
Department within company
Other Source, please specify
Year.....
 6. (a) If the company uses the installment method of reporting for tax purposes, please state the fiscal year it adopted it.
Year.....
(b) Please give the company's reasons for not adopting the installment method for tax purposes prior to that year.
 7. Rate, using the scale below, the help given the company by its auditors in the areas stated below with respect to installment reporting for tax purposes.
(SCALE: 1. Very Helpful 4. Very Little Help
2. Quite Helpful 5. No Help
3. Helpful 6. Assistance Not Requested by the Company)
- | | |
|--|-------|
| Understanding the Tax Law | |
| Understanding the reporting procedures for deferred taxes | |
| Computing the benefits and costs of using the installment method | |
| Setting up a bookkeeping system to satisfy tax reporting needs | |
| Any other help given? Please specify. | |

8. During the company's evaluation of the advantages and disadvantages of the change to the installment method some of the issues listed below may have been considered,

(a) Rank in *descending order of significance to the decision* of adoption or rejection of the change, *ONLY* those considered by the company in arriving at its decision. Start with the most significant and work through to the least, thus the most significant is ranked 1, the least 13, if all issues were considered.

(b) Show by checking the relevant box adjacent to each ranking whether you consider the issue to be an advantage or a disadvantage.

	Rank	Advantage	Disadvantage
Alleviation of "double tax" on receivables held prior to change over. (1954 Revenue Code)	()	()
Ability to sell the receivables held prior to change over. (City Stores vs Smith (1958) case)	()	()
Stockmarket's lack of understanding of the benefits of the change.	()	()
Changes in annual tax payments due to change over.	()	()
General economic climate at the time of the decision.	()	()
Possibility of a reduction in deferred tax balance.	()	()
Reporting requirements for annual changes in deferred taxes.	()	()
Cost of additional bookkeeping.	()	()
Ease of changing to the installment method.	()	()
Ease of changing from the installment method at a later date if necessary.	()	()
Reporting requirements in Annual Reports for effects of changes in tax rates on deferred tax balances.	()	()
Effect on tax payments of possible changes on future tax rates.	()	()
Allowance of revolving credit sales to be reported under the installment method for tax purposes. (1964 Revenue Code)	()	()

9. Does the company use some form of accelerated depreciation for tax purposes, and straight line for book purposes? If so, please give the fiscal year the company changed its tax depreciation to the accelerated form.

Year.....

10. Please state the year *you think* the installment method of reporting for tax purposes became law. (Please answer this without reference to your files.)

Year.....

11. Please give your reasons why you think other firms did not change sooner to the installment method for tax purposes.

12. Please state the annual \$ amount of the company's installment sales for each year during the 1948-68 period. (If applicable.)

1948.....	1955.....	1962.....
1949.....	1956.....	1963.....
1950.....	1957.....	1964.....
1951.....	1958.....	1965.....
1952.....	1959.....	1966.....
1953.....	1960.....	1967.....
1954.....	1961.....	1968.....

13. Please state the annual \$ amount of the company's deferred tax charge in Income Statement due to installment sales for each year during the 1948-68 period. (If applicable.)

1948.....	1955.....	1962.....
1949.....	1956.....	1963.....
1950.....	1957.....	1964.....
1951.....	1958.....	1965.....
1952.....	1959.....	1966.....
1953.....	1960.....	1967.....
1954.....	1961.....	1968.....

14. Would you like a copy of the study's results? Please circle the appropriate answer.

Yes

No

Contributors to Accounting and Business Research

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